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THE SCIENCE OF THOUGHT

F. MAX MÜLLER

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THE

SCIENCE OF THOUGHT

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BY

F. MAX MÜLLER

No Reason without Language
No Language without Reason

London
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1887

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DEDICATED TO

LUDWIG NOIRÉ

WITHOUT WHOSE ENCOURAGEMENT THIS VOLUME

MIGHT NEVER HAVE BEEN PUBLISHED

PREFACE.

THIS book has been written for myself, and for a few friends with whom I have been travelling for many years on the same road. We have exchanged our thoughts from time to time. We agree on some points, we differ, or we imagine we differ, on others; and as we shall soon have come to the end of our journey, I wished to leave on record what is the outcome of many years of common work and thought and friendly discourse. Beyond my friends and acquaintances, scattered in England, Germany, France, Italy, America, and India, whose ranks have of late been sadly thinned, there will be few, I am afraid, to whom this book is likely to be of much interest. The subjects of which it treats do not at present excite public sympathy, whether in England or on the Continent. There is a fulness of time for philosophical as there is for political and social questions. As the successful statesman must keep his eye on the sphere of practical politics, as the efficient reformer must set his sail to catch the wind blowing from the right quarter, a writer who wishes to produce a telling and popular book ought not to choose a subject which has had its day, and is not likely soon to rise again above the horizon.

And not only are the subjects treated in this

volume out of fashion, but the views advocated in it run counter to the trade-wind of public opinion, so that, if noticed at all, I fear my venturesome craft will be severely buffeted by the waves of adverse criticism, if not sucked down mercilessly by the maelstrom of general indifference.

It might have seemed more prudent, no doubt, not to publish the book, at least not in its present form, which may often betray its slow and gradual growth. Some of the views here put forward date really from the days when I attended the lectures of Lotze, Weisse, and Drobisch at Leipzig, and of Schelling at Berlin; when I discussed Veda and Vedânta with Schopenhauer, and Eckhart and Tauler with Bunsen. The fundamental principles of the classification of languages were foreshadowed as early as 1854, in my 'Letter on the Turanian Languages.' Some portions of my book formed part of Lectures given at the Royal Institution in 1873 on the Philosophy of Language (Fraser's Magazine, May, June, July 1873); while others appeared in the Contemporary Review, February 1878, in an essay on the Origin of Reason, devoted to Noiré's book, Der Ursprung der Sprache. In working up these long accumulated materials and trying to amalgamate them with the results of later labours, it was not always easy to avoid a certain iteration, more perhaps than is justified by a wish to force reluctant minds into a readier acceptance of strange and unpalatable truths.

But, after all, we cannot always be guided by prudence, nor ought a man at my time of life to think

much of momentary success. I feel convinced that the views put forward in this book, which are the result of a long life devoted to solitary reflection and to the study of the foremost thinkers of all nations, contain certain truths which deserve to be recorded. I trust that in time some of them will be recognised as well founded, while others may at all events claim their place in that continuous dialectic process which, by rubbing off the rough edges of prejudice and error, will in the end restore the old gem of truth to its perfect form and its own innate brilliancy. I have written some of my books as a pleader, and, if I may judge by results, I have not pleaded quite in vain. But the present book is not meant to be persuasive. All I can say of it is, Dixi et salvavi animam meam.

And yet, such is paternal weakness that I cannot help putting forth a few pleas for my unattractive offspring. I always appreciate honest criticism, more even than honest praise. But if my book is to be criticised at all, I pray it may not be tested by mere shibboleths, or condemned by being called names.

I know, of course, that the system of philosophy which it propounds may, and probably will be called Nominalism, and Nominalism in its most extreme form. I have the highest regard for Nominalism. I believe it has purified the philosophical atmosphere of Europe more effectually than any other system. But nothing is so misleading as to use old names, as if everybody knew what they meant. Those who know the writings of William of Occam, would never

think of applying the same name to his system and to my own. In one sense my system may, no doubt, be called Nominalism, because it aims at determining the origin and the true nature of names. But that is not the historical meaning of Nominalism, and the results to which a study of language has led us in this nineteenth century are very different from those that were within the reach even of the profoundest thinkers in the eleventh and fourteenth centuries. If there must be a name for the theories established by the combined Sciences of Language and Thought, let it be a distinctive name, not Nominalism, but Nominism.

Again, it would be very easy to call my system Materialism, and to paint in dismal colours what may not unfairly be represented as its outcome, namely, that there is no such thing as intellect, understanding, mind, and reason, but that all these are only different aspects of language. I certainly hold that view, and I do so after having carefully weighed and tested every argument that has been or can be advanced against it. My own opinion may be right or wrong, but supposing it should prove right in the end, the consequences would by no means be so terrible as they appear. We should remain in every respect exactly as we were before, we should only comprehend our inner workings under new and, I believe, more correct names. If I say, 'No reason without language,' I also say, 'No language without reason.'

Lastly, I hope that those who think that every

system must be hall-marked, will not ask whether my book is Darwinian or not. If Darwinism is used in the sense of Entwickelung, I was a Darwinian, as may be seen from my 'Letter on the Turanian Languages,' long before Darwin. No student of the Science of Language can be anything but an evolutionist, for, wherever he looks, he sees nothing but evolution going on all around him. But with regard to one question to which party-spirit has given an undue pre-eminence, namely, the descent of man from monkey, I am not a Darwinian, not because I am afraid to follow Darwin, but because I go far beyond Darwin. I believe I am correct in stating that at present the most competent judges consider the descent of man from any other kind of animal Not Proven. But while Darwin would have been satisfied with having established the descent of man from some kind of animal, I have never doubted, nor do I doubt, that man has been, is, and always will be an animal, i.e. a living being; only not a dumb animal, but an animal with the proprium of language and all that is implied by language. And here again I repeat, we must not be frightened by names. We are and shall remain what we are, whether we call ourselves angels or animals. We share everything with animals except language, which is our own; and if that is so, surely those who seem so anxious for the dignity of man, should care for nothing more than for the lessons which they can learn from the Science of Thought, founded, as it is and ought to be, on the Science of Language.

One more plea, and I have done. Thought, in the

sense in which I have defined it and used it in my book, represents one side of human nature only, the intellectual, and there are two other sides, the ethical and aesthetical, on which I have not touched. Whether the self-conscious Mona, which are all that I postulate, might be without any ideas of what is good or beautiful, I do not wish to determine. Anyhow, we can, for our purpose, treat them as if they were, and leave the origin of their ethical and aesthetical concepts and names to be treated by others.

To some it may seem indeed that the quality of self-consciousness need not be simply postulated, but stands to reason, because a Monon, in its absolute loneliness, could not be conceived to exist except as self-conscious. With it esse could be nothing if not percipi per se. There is, as I have shown in my book, some truth in this, but I have reserved the full treatment of that question for another book which I have long prepared, 'The Science of Mythology.' In it self-consciousness will appear under a new aspect, and after an analysis of both subjective and objective myth, two phases through which the human mind in its natural growth must pass, I hope, if life is still prolonged, to be able to show that the same road which led mankind into the wilderness of mythology, in the widest sense of the word, may lead us back to a point from which we recognise in all self-conscious Mona the Great Self, conscious of all Mona.

As this work may possibly be the last which I shall be allowed to finish, I take this opportunity of publicly thanking the Academies, Universities, and

Learned Societies which, during the long years of my literary career, have done me the honour of electing me one of their Foreign, Honorary, or Corresponding Members. Unworthy as I feel of the high distinctions conferred on me, some of them at a very early period of my life, they have been to me not only a precious reward, but at the same time a strong incentive in the production of works which, though they could not hope for popular applause, should secure to me the approval of my fellow-workers. I count as the happiest days of my literary life my election in 1865 as one of the Six Foreign Members of the Royal Sardinian Academy, the other five then being Thiers, Boeckh, Cousin, Grote, and Mommsen; my succeeding, in 1869, Welcker, as one of the Eight Foreign Members of the Académie des Inscriptions et Belles-Lettres, and my co-optation in 1874 as one of the Thirty Knights of the Ordre pour le Mérite. If on the title-pages of my books I have generally confined myself to those few honorary titles only, I am truly sorry that this should have been interpreted as an invidious distinction on my part. I feel equally grateful for all the other diplomas that have been bestowed upon me, and all the more so as they came to me entirely unsolicited and unexpected, and as I, in my position at Oxford, had never any equivalent to offer in return.

If, in the following list of my patrons and well-wishers, I should have left out the names of any Societies that have conferred on me their honorary fellowship, I hope they will forgive me. Of course,

the names of Societies the membership of which is acquired by an annual payment, are not mentioned, nor any distinctions which are conferred for services not purely literary. It may be difficult in thus returning my thanks to separate a feeling of pride from a sense of gratitude, but if any pride can be pardonable, it is surely that of having gained the good opinion of our peers and of our betters.

F. MAX MÜLLER,

Knight of the Ordre pour le Mérite; Knight of the Order of Maximilian (for Science and Art); Knight Commander of the Corona d'Italia; Foreign Member of the French Institute, Académie des Inscriptions et Belles-Lettres; of the Royal Sardinian Academy; of the Royal Academy of the Lincei at Rome; of the Royal Bavarian Academy; of the Royal Hungarian Academy; of the Royal Irish Academy; of the Royal Society of Upsala; of the American Academy of Arts and Sciences, Boston; of the American Philosophical Society; Honorary Member of the Royal Academy of Sciences at Amsterdam; of the Royal Academy of Roumania; of the American Academy of Arts and Sciences; of the Royal Batavian Society of Arts and Sciences; of the Royal Society of Literature; of the Royal Historical Society; of the Royal Asiatic Society; of the German Oriental Society; of the Asiatic Society of Bengal; of the Oriental Society at Peking; of the Anjuman-i-Panjab; of the Société de Littérature Finnoise at Helsingfors; of the Cambridge Philosophical Society; of the Literary Society of Leyden; of the Anthropological Institute of Great Britain and Ireland; of the Ethnographic Society of Paris; of the Folklore Castellano; of the American Oriental Society; of the Archaeological Society of Moscow; of the American Philological Society; of the New Zealand Institute; of the Lituanian Literary Society; Corresponding Member of the Royal Academy of Berlin; of the Royal Academy of Lisbon; of the Royal Society of Göttingen; of the Royal Society of Palermo; Ph. D. in the University of Leipzig; M. A. Oxford; Honorary Doctor of Laws in the Universities of Cambridge and Edinburgh; Professor of Comparative Philology, and Fellow of All Souls College, Oxford.

OXFORD, Jan. 26, 1887.

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THE SCIENCE OF THOUGHT.

CHAPTER I.

CONSTITUENT ELEMENTS OF THOUGHT.

FEW words have been used in so many different senses as Thought. I mean by Thought the act of thinking, and by thinking I mean no more than combining. I do not pretend that others have not the right of using Thought in any sense which they prefer, provided only that they will clearly define it. I only wish to explain what is the meaning in which I intend to use the word, and in which I hold that it ought to be used. I think means to me the same as the Latin Cogito, namely co-agito, 'I bring together,' only with the proviso that bringing together or combining implies separating, for we cannot combine two or many things without at the same time separating them from all the rest.

The meaning of Thought.

Hobbes expressed the same truth long ago, when he said that all our thinking consisted in addition and subtraction.

Humiliating as this may at first sight appear, it is really not more so than that the most subtle and complicated mathematical processes, which to the uninitiated seem beyond all comprehension, can be reduced in the end to addition and subtraction.

Thinking may not seem so marvellous an achievement as we formerly imagined, when we looked up with vague admiration to the mathematical calculations of Newton, or to the metaphysical speculations of Kant; yet, if what these thinkers achieved has been achieved by such simple processes as addition and subtraction, combining and separating, their work to my mind becomes in reality far more marvellous than it appeared at first.

Much, however, depends on what we combine and separate, and we have therefore to consider what corresponds in thinking to the numbers with which the mathematician operates, what are, in fact, the known quantities that constitute the material of our thoughts, what are the elements which we bring together or co-agitate.

Materials of Thought.

It is possible to distinguish in our knowledge four things: Sensations (Empfindungen), Percepts[1] (Vorstellungen), Concepts (Begriffe), and Names (Namen).

But though we can distinguish them, we must not imagine that these four ever exist as separate entities. No words are possible without concepts, no concepts without percepts, no percepts without sensations. This is more readily admitted by most philosophers. But if we ourselves postulate sensations as the causes of percepts, percepts as the causes of concepts, and concepts as the causes of names, it would seem a very natural conclusion that sensations could exist previous to and therefore inde-

[1] I use percept instead of presentation, because it is better understood in English, and, if only properly defined, will answer exactly the same purpose as the German Vorstellung.

pendent of percepts, percepts of concepts, concepts of words. And yet we have only to try the experiment in order to convince ourselves that, as a matter of fact, thought, in the usual sense of the word, is utterly impossible without the simultaneous working of sensations, percepts, concepts, and names, and that in reality the four are inseparable.

Can Sensations exist by themselves?

If we are asked whether it is impossible to conceive that sensations may exist without being perceived, percepts without being conceived, concepts without being named, the answer is somewhat difficult. We may have to admit in theory the possibility of sensations which do not assume the character of percepts, of percepts which have not yet reached the stage of concepts, and of concepts still waiting to be named. But possibility is very different from reality, and when speaking of the reality of thought, I deny altogether the separate existence of the four constituent elements of thought.

It has been pointed out, however, by those who call themselves physiological psychologists that our organs of sense are constantly receiving sensations which are either not fully realised or not realised at all. This I do not mean to deny, difficult as it may be to explain it: only I should in this case use the word impression rather than sensation. While I sit at my table or pace up and down my room, I know, as a matter of fact, that the heat of the room, the scent of the flowers, the noises in the street, the colour of the table-cloth and the carpet, are all acting on my senses. Yet, they do not at present exist for me. I have neither perception, nor

conception, nor name of them. I do, in fact, not know of them. My attention is engaged by the etymology of a word, or it may be by some difficult sentence in Aristotle. But as soon as I direct my attention to any of these various circumstances, the sensations, the percepts, the concepts, the names are there all at once. My hands feel cold, my eyes lay hold of the carpet, my ears hear and understand the very words shouted in the street, my nose distinguishes various scents, by calling them scents of pinks or roses. Not only do I see the carpet, but I am conscious of my seeing it, and the difference between these two states is enormous. I now see not only the carpet, but all that belongs to it—its colour or colours, its pattern, and, as it is not very new, its very seams. All this may seem very simple to psychologists, but it is not. We say that we were listless before, and that we are now attentive, but what this attention and that listlessness mean, no psychologist has as yet been able to explain in a satisfactory manner[1]. In one sense what we call attention, the dawn of thought, the new awakening interest in our surroundings, may be said to be at the root of all our knowledge; but possibly the power of abstraction may also be not very far removed from the weakness of distraction[2].

[1] 'The metaphysics of attention have hardly been sounded to their depths.' Wendel Holmes, The Poet at the Breakfast Table, vol. i. p. 160.

[2] Mill, Logic (ii. 5, 1): 'We can reason about a line as if it had no breadth; because we have a power, which is the foundation of all the control we can exercise over the operations of our minds; the power, when a perception is present to our senses or a conception to our intellects, of attending to a part only of that perception or conception, instead of the whole.' F. H. Bradley, 'On the Nature of Attention,' in 'Mind,' Aug. 1886.

Before we can proceed with our own argument, it is necessary first of all to explain why we cannot avail ourselves of the help and advice of those philosophers who profess to explain what passes within our mind by comparing and contrasting it with what is supposed to pass in the mind of animals, who are said to have sensations, without concepts or names. The simple reason is that we can never, in the true sense of the word, know what passes within the mind of animals, though we may infer all we like, and always do infer exactly what we like. Some philosophers, however, regardless of all protests, have either decided against the possibility of ascribing anything deserving the name of intellect to animals, or have insisted on placing some animals on the same, nay on a higher level of intellectual development than what has been reached, as yet, by the lowest races of mankind, such as, for instance, the Fuegians. It is a pity that neither the one nor the other party will tell us from whence they derive their information, and whether in their assertions they are guided by anything more than analogy. And it is certainly amusing to see how even those, who are ready enough to support their own views by an appeal to the intellectual powers of animals, invariably plead complete agnosticism as soon as evidence unfavourable to their arguments is adduced from the menagerie. Thus J. Stuart Mill, in answering Dr. Whewell's question, 'Are we to say that a mole cannot dig the ground except he has an idea of the ground, and of the snout and paws with which he digs it?' replies haughtily: 'I do not know what passes in a mole's mind[1].'

Dangers of Menagerie Psychology.

[1] Logic, i. 5, 1.

Arguments derived from the Brain of Animals and Men.

Some authorities depend mainly on the evidence of the brain, and maintain that the difference between the brain even of the most highly developed animal and that of the lowest specimen of mankind is such as to exclude the admission of any similarity between their mental activity and our own. They naturally lay great stress on the fact that the volume of the brain of the highest gorilla is only 500 cubic centimetres, while that of the lowest Australian is 1628, and that the volume of the human brain varies from 1628 to 1835, i. e. 207 cubic centimetres, while the difference between the lowest human and the highest animal brain amounts to 1128 cubic centimetres[1]. Others, however, reply that in all essentials the brain of animals is identical with the brain of man, and that mere volume is of little consequence. Grossa testa non ha buon cervello. They also point out that animals nearest to us in intelligence, such as elephants or dogs, are more remote from us in the structure of their brain than some of the most stupid of apes, and that therefore the brain alone cannot help us to decide the question. Mr. Wallace has called attention to the curious fact that even the small brain and the capacities of the Australians are far beyond any use to which they could apply them in their present condition, and he has argued that therefore they could not have been evolved from the mere necessities of their environment[2]. The same fact, however, might also be used as an indication

[1] F. Pfaff, Die Theorie Darwins und die Thatsachen der Geologie. Frankfurt, 1876.

[2] Quoted in 'Unseen Universe,' p. 174.

that the Australians had formerly reached a higher stage of culture than they occupy at present, high enough, at all events, to enable them to form their language, and that the present race consists of degraded descendants of nobler ancestors. A man might inherit a large brain and yet be unable to use it, just as the possession of a large telescope would not necessarily raise its possessor to the rank of a Newton.

Another reason why in estimating the mental life of animals we ought not to be entirely guided by the volume or structure of their brains is that the organs of their senses may be so highly developed as to make them less dependent on the brain. We know the extraordinary power of scent possessed by certain dogs, a fact which must have struck the early framers of our language so much as to induce them to derive their names for judgment from the sagacity of dogs[1]. A dog knows by scent where we can only know by reasoning, a difference which seems to have attracted the attention of the earliest poets. Homer (Od. xvii. 291), when describing the return of Odysseus, tells us how no one recognises in the old beggar the young princely master who had left the island twenty years ago, except Argos, his dog. He pricks up his ears, wags his tail, and dies. How different the old nurse! She is first struck by the whole appearance (the δέμας, one might almost say the εἶδος), then by the voice, then by the feet; but she hesitates even then, till at last

Sense better than Reason.

[1] See 'Biographies of Words,' by M. M., in 'Good Words,' April, 1886, p. 246, and compare homo emunctioris nasi in Latin, aver buon naso in Italian, tener narices de perro perdiguero in Spanish. Brinkmann, Metaphern, p. 183.

she discovers the scar on his knee. This is the salient feature, one might almost say the ἴδιον, by which she recognises her foster-child. No psychologist, wishing to illustrate the difference between the mind of animals and the mind of men, could have done so more poetically, and yet more truly, than Homer in describing the recognition of Odysseus by his dog Argos and by his nurse Eurykleia, the one sniffing, the other reasoning, the one trusting to his nose, the other to her reason.

Travellers have often been struck with the quickness with which people in a low stage of civilisation arrive at practical conclusions. When Captain Head was travelling across the Pampas of South America, his guide one day suddenly stopped him, and, pointing high into the air, cried out, 'A lion!' Surprised at such an exclamation, accompanied with such an act, he turned up his eyes, and with difficulty perceived, at an immeasurable height, a flight of condors soaring in circles in a particular spot. Beneath this spot, far out of sight of himself or guide, lay the carcass of a horse, and over that carcass stood, as the guide well knew, a lion, whom the condors were eyeing with envy from their airy height. The signal of the birds was to him, what the sight of the lion alone would have been to the traveller, of full assurance of its existence[1]. The same kind of immediate and almost intuitive judgment animals share in common with man, nay, they seem to excel man in their spontaneous, and therefore unerring combinations.

No one is more inclined to believe almost anything

[1] Sir J. Herschel's Preliminary Discourse, p. 84. Thomson, Laws of Thought, p. 58.

about dogs than I am, and I speak from a long acquaintance and friendship with them.

My dog Waldmann[1] was once in his younger days sent to a show at the Crystal Palace. He had been on his stand for three days with thousands of other dogs, and looked at by thousands of human beings. When I went there on a Saturday to fetch him back, I was most careful not to speak, not even to look where he was. I moved by in a dense crowd, but long before I came near him, the dog jumped from the table to which he was chained, and nearly hanged himself by trying to reach me. How did he know me? It may be by scent, but this must have enabled him to distinguish me from thousands of other people with a greater assurance than that which enables us to distinguish black from white. How did I know my dog, or rather, I ought to say how should I have known him among hundreds of Dachs-hunds, all being black and tan, all having crooked legs and very long backs? First of all, by a general vague impression, afterwards by one or two salient points, but probably never with that assurance with which he knew me, unless he had first spoken to me.

And what applies to the highly developed sense of scent in dogs, applies equally to the highly developed sense of sight, for instance, in pigeons. How can we attempt to realise what passes within the mind of an animal whose organ of sight is actually larger than the whole of its brain, as is the case with certain pigeons remarkable for their long flights? We can imagine anything we like about what passes

[1] He is the father of Matthew Arnold's Geist, and is still in good health and spirits.

in the mind of an animal,—we can know absolutely nothing.

The teaching of Animals by Men.

A great deal has often been made of what animals can be taught to do, but we must remember that to be taught a thing is very different from producing it ourselves. If a dog or an elephant or a parrot were to learn the whole of Littré's Dictionary of the French Language by heart, that would not prove that dogs could have produced the French language. It is said that our children too are taught English or French. That is true, but they are the descendants and so far the representatives of a race which produced language, and if there is hereditary transmission in body, there is hereditary transmission in thought also.

Lessons taught a Pike.

Even the most unintelligent of animals can be taught very strange lessons; but the question remains to be answered whether these lessons are performed intelligently. We must be careful not to believe all that is told us about the intelligence of dogs and cats and ants, for no ancient MS. is more difficult to decipher than the acts of animals, and no loving parents are more foolish about what they see in their children than fanciers of bees and ants are about the cleverness of their pets. The following experiment, however, is vouched for by an exceptionally trustworthy authority. It was very ingeniously contrived by Mr. Amtsberg of Stralsund with a view of discovering the powers of generalisation in the ordinary habits of animals, and was described by Dr. Möbius, Professor of Zoology at Kiel[1].

[1] Schriften des Naturwissenschaftlichen Vereins für Schleswig-Holstein; Separatabdruck, Kiel, 1873.

'A pike, who swallowed all small fishes which were put into his aquarium, was separated from them by a pane of glass, so that, whenever he tried to pounce on them, he struck his gills against the glass, and sometimes so violently that he remained lying on his back, like dead. He recovered, however, and repeated his onslaughts, till they became rarer and rarer, and at last, after three months, ceased altogether. After having been in solitary confinement for six months, the pane of glass was removed from the aquarium, so that the pike could again roam about freely among the other fishes. He at once swam towards them, but he never touched any one of them, but always halted at a respectful distance of about an inch, and was satisfied to share with the rest the meat that was thrown into the aquarium. He had therefore been trained so as not to attack the other fishes which he knew as inhabitants of the same tank. As soon, however, as a strange fish was thrown into the aquarium, the pike in nowise respected him, but swallowed him at once. After he had done this forty times, all the time respecting the old companions of his imprisonment, he had to be removed from the aquarium on account of his large size.

'The training of this pike,' as Professor Möbius remarks, 'was not, therefore, based on judgment; it consisted only in the establishment of a certain direction of will, in consequence of uniformly recurrent sensuous impressions. The merciful treatment of the fishes which were familiar to him, or, as some would say, which he knew, shows only that the pike acted without reflection. Their view provoked in him, no doubt, the natural desire to swallow them,

but it evoked at the same time the recollection of the pain he had suffered on their account, and the sad impression that it was impossible to reach the prey which he so much desired. These impressions acquired a greater power than his voracious instinct, and repressed it, at least for a time. The same sensuous impression, proceeding from the same fishes, was always in his soul the beginning of the same series of psychic acts. He could not help repeating this series, like a machine, but like a machine with a soul, which has this advantage over mechanical machines, that it can adapt its work to unforeseen circumstances, while a mechanical machine cannot. The pane of glass was to the organism of the pike one of these unforeseen circumstances.'

The same process is sometimes adopted in the earliest education of children and with much the same result, only that in the case of a child we are apt to say that it reasons, even before it can speak, though in reality it is only influenced by the memory of repeated uniform experiences. A child therefore may well be said to have memory, before it has language, just as the pike remembers, though it cannot speak [1]. What a pike cannot do is to learn to speak, and to do anything which can be done by speech alone. And this, it seems to me, was clearly perceived by Hume when he somewhat boldly said that 'animals in their inferences are not guided by reasoning[2],' or when Mill said: 'There is no ground for attributing to any of the lower animals the use of signs of such a nature as to render general proposi-

[1] See Huxley, Hume, p. 97.

[2] See, however, Huxley, l. c., p. 108.

tions possible. But,' he adds, 'those animals profit by experience, and avoid what they have found to cause them pain, in the same manner, though not always with the same skill (I should say, often with far greater skill) as a human creature. Not only the burnt child, but the burnt dog, dreads the fire[1].'

The Instinct of the Emperor Moth.

There are other instances, however, of animal intelligence, or whatever else we like to call it, which are simply beyond all comprehension. We may apply to them what names we please, instinct, light of nature, divine guidance or anything else, but we can only stand by and admire. I shall give one case only, but again, one which I believe to be perfectly well authenticated, and for the explanation of which neither inheritance, nor habit, nor imitation can be of any avail[2].

'The grub of the "Saturnia Pavonia minor" spins, at the upper end of its case, a double roof of stiff bristles, held together at the end by very fine threads. This roof opens through a very light pressure from within, but offers a strong resistance to any pressure from without. If the grub acted according to judgment and reason, it would, according to human ideas, have had to consider as follows:—That it might possibly become a chrysalis, and be exposed to all sorts of accidents without any chance of escape, unless it took sufficient precautions; that it would rise from the chrysalis as a butterfly, without having the organs and power to break the covering which it had spun as a grub, or without being able, like other

[1] Logic, ii. 3, 3.

[2] Autenrieth, Ansichten über Natur und Seelenleben, 1835.

butterflies, to emit a liquid capable of dissolving silky threads; that, therefore, unless it had, while a grub, made preparations for an easy exit from its prison, it would suffer in it a premature death. While engaged in building such a prison the grub ought to have perceived clearly that, in order to escape hereafter as a butterfly, it would have to make a roof so constructed that it should protect from without, but open easily from within, and that this could be effected by means of stiff silky bristles, converging in the middle, but otherwise free. It would also have to know beforehand that for that purpose the same silky substance had to be used out of which the whole covering was built up, only with greater art. And yet it could not have been instructed in this by its parents, because they were dead before it escaped from its egg. Nor could it have learnt it by habit and experience, for it performs this work of art once only in its life; nor by imitation, for it does not live in society. Its understanding, too, could be but little cultivated during its grub-life, for it does nothing but creep about on the shrub on which it first saw the light, eat its leaves, cling to it with its feet, so as not to fall to the ground, and hide beneath a leaf, so as not to be wetted by the rain. To shake off by involuntary contortions its old skin whenever it became uncomfortable, was the whole of its life, the whole of its reasoning, before it began to spin its marvellous shroud.' I have given these two cases rather fully, because they seem to me typical cases of acquired and unacquired wisdom, and because I felt it necessary, once for all, to define my own position with respect to the so-called intellect of animals.

The hopelessness of explaining cases of this kind according to any scientific principles, and the arbitrariness with which students of nature have explained them nevertheless in support of the most opposite views on the mental faculties of men and animals, had formerly led to a kind of understanding among serious psychologists, never to appeal to this kind of evidence again. We can imagine, for instance, that a mollusc is a mere mass of pulp and lives in total darkness, but we may equally well imagine that, being free from all the disturbances of the senses, and out of the reach of all those causes of error to which man is liable, it may possess a much more perfect self-knowledge, a much truer and deeper insight into the essence of the Absolute, and a much fuller appreciation of eternal truths than any human soul. If further proof were wanted that all the observations on the intelligence of animals and all the conclusions that have been based on it are useless, nay, even mischievous, we might appeal to the fact that while some of the greatest philosophers have convinced themselves that animals are mere automatic machines, others equally great see no essential difference between man and animal, not even that of language. I therefore warn my readers once for all, that if, either in order to answer other philosophers or to come to an understanding with them, I speak sometimes of the intellect of a dog or an elephant or an ape, I do not speak of real animals, but only of those conventional beings that owe their existence to the pleasure of physiologists and psychologists, but are nowhere to be found in nature.

Useless arguments derived from the intelligence of animals.

Returning after these preliminaries to my study

with its table, its flowers, and its carpet, I am willing to admit that the dog, the conventional dog, who is all the time lying at my feet on the carpet, has no perception of the carpet as such, or a concept of the carpet as a piece of workmanship or a work of art. Though he feels, and smells, and sees what we call carpet, he cannot be said to be conscious of his perceiving. Sensation and consciousness of sensation represent two different worlds[1]. He would never distinguish its colours or pattern, never notice its too visible seams, never utter a peculiar bark for carpet. All this, however, throws very little light on the presence or absence of attention in our own mind, and leaves many things even in the mind of the conventional dog quite unexplained. Why, for instance, should the same dog perceive the step of his master or of a stranger on the staircase long before I do, and why should he be able to draw what may be called an inference as to a cat having crept over his carpet, from indications far too faint to attract my attention or excite my interest?

Instead of having recourse to animals, or rather to the ever-ready conventional animal of the philosopher, it is far better to examine ourselves, if we want to find out what does or what does not pass within our own mind. We shall then discover that, in spite of our own loose phraseology, we never in reality perceive anything, unless we can distinguish it from other things by means, if not of a word, yet of a sign; that is, till we have passed through the four stages of sensation, perception, conception, and, more important than all, of naming; for we name, not only by words, but by other signs also.

[1] See T. H. Green, Works, vol. ii. p. 212.

What we may, however, grant to the physiological psychologists is that our senses receive many impressions unperceived, impressions of which we are not conscious at the time, and that some of these impressions may leave traces behind which influence and determine our thoughts in a way quite inexplicable to ourselves. There are degrees of listlessness and attention, and some of these half-realised impressions may well account for the vague imaginings, for dreams and fancies, which are familiar to most of us, but which we are often totally unable to explain. Do we not often imagine that we have seen a face or scenery, though we have not? Do not images and thoughts suddenly rise within us, though we cannot tell whence they come and whither they go? Unrealised impressions may not account for the whole of this mysterious sphere of what has been sometimes called 'unconscious cerebrisation,' but they nevertheless may have their share in it.

Unperceived Impressions.

We have thus seen at the very beginning of our analysis of the human mind how much confusion of thought can be caused by the abundance and super-abundance of philosophical terms. Because we have a name for impressions by the side of sensations, we are led to imagine that impressions do actually exist by the side of sensations. But what was originally meant by impression was not something beside sensation, but rather one side of sensation, namely the passive side, which may be spoken of by itself, but which in every real sensation is inseparable from its active side. We can never be entirely passive when we receive (capiendo re-cipimus), that is, when

Abundance of Philosophical Terms.

we lay hold of what is offered us. Even the faintest shiver of our senses is pervaded by something peculiar to ourselves, something which we must accustom ourselves to call mental. The term impression may be useful for certain purposes, but it becomes mischievous as soon as it is taken for something entirely independent of ourselves. We shall meet with this difficulty again and again, and we shall arrive at the conclusion, I believe, that it would really be the greatest benefit to mental science, if all such terms as impression, sensation, perception, intuition, presentation, representation, conception, idea, thought, cognition, as well as sense, mind, memory, intellect, understanding, reason, soul, spirit, and all the rest could for a time be banished from our philosophical dictionaries, and not be re-admitted till they had undergone a thorough purification.

That every one of these words is used in different senses by different philosophers might be tolerated, if only each philosopher would tell us clearly, and once for all, in what sense he himself means to use them. But this is what few philosophers, not even Kant, attempt to do; and if they do it, they often seem to imagine that because there are so many words, there must also be so many distinctions[1]. They overburden us with definitions which overlap each other and make confusion worse confounded.

Nor is this all. In every act of the mind we may

[1] Mill, Logic, i. 3, 9, rightly speaks of the disposition, wherever we meet with two names which are not precisely synonymous, to suppose that they must be the names of two different things, as a cause of many delusions.

distinguish at least three things, the act, the instrument, sometimes called the faculty, and the result, though we ought always to remember that these three can never be completely separated. This will require more careful examination.

Act, Instrument, Result.

Impression is generally used in the sense of a product. It seems to imply no act, and to require no instrument. All that we are told is that an impression is caused by an irritation of the senses.

Sensation means both an act and the product of the act. The instrument would be called sense or the senses.

Perception is an act, its product may be distinguished by the name of percept, but it is difficult to find a good name for the instrument. What I mean by perception is sometimes called presentation (Vorstellung) or image, by Locke idea, by Hume impression, by others intuition (Anschauung), etc. I should have preferred to use mind as the name of the instrument or faculty through which we realise our perceptions, but we want this word in its more general sense, comprising all that is going on within us, and we are therefore driven to take the name of imagination (Einbildungskraft[1]), if we want to speak of that supposed instrument or faculty which enables us to form images or sensuous percepts.

Conception is an act, its product a concept, while the instrument is called by various names, intellect, understanding (Verstand), reason (Vernunft), synthesis of recognition, etc.

[1] 'Transcendental unity of imagination,' Kant.

Sensation, Perception, Conception, Naming.

If we add to these nine terms those of Naming (Logos), Language, and Name, we have all we want in speaking definitely of the operations of the mind. I shall confine myself, as much as possible, to this terminology, but I must reserve its full justification for a later part of this enquiry.

Act.	Instrument or Faculty.	Product.
Sensation,	Sense,	Sensations.
Perception,	Imagination,	Percepts [1].
Conception,	Intellect,	Concepts [2].
Naming,	Language,	Names.

Memory and Mind.

In addition to these we still want two words, one to express the partial permanence of sensations, percepts, and concepts, which I call Memory, or if we must distinguish between act and instrument, remembrance and memory. We shall see, however, that for our mental operations Obliviscence is often more important than Memory, and exercises the greatest influence, not only on our reasoning, but on our fancy also. Another name is wanted as a general term for all that is going on within us, whether sensation, perception, conception, or naming, for which I reserve Mind, if we want a noun, and to think, if we want a verb [3].

Sensation, being shared in common by men and animals, is often represented as the lowest degree of

[1] Locke: Simple ideas, (1) of sense, (2) of reflection. Berkeley: Ideas, (1) imprinted on the senses, (2) produced by the passions. Hume: Impressions.

[2] Locke: Complex ideas. Berkeley: Ideas formed by memory and imagination. Hume: Ideas.

[3] Thus Descartes (Principes de Philosophie, ed. Cousin, p. 57) says: 'c'est pourquoi non-seulement entendre, vouloir, imaginer, mais aussi sentir, c'est la même chose ici que penser.' See Huxley, Hume, p. 62.

mental activity. But though it may be the lowest, in so far as it is the first act, it is also in another sense the highest, the first, the most important act. Instead of being the most easy to understand, it is really the most mysterious, an act which admits of no simile or metaphor anywhere, an act which we cannot explain by any other, an ultimate fact in our subjective world, as motion is in the objective world. French philosophers imagined that by their tenet of Penser, c'est sentir, they were degrading thought; but they were wrong. Condillac and his school had previously taken out of sentir all that is penser, and they then thought that, like a clever juggler, they could startle the world by showing that the bird was still to be found in the broken egg-shell. If, however, we take sensation, such as it really is, impregnated with thought, not such as it was imagined to be, as a reflection in a looking-glass or an impression on a tabula rasa, then penser may as truly be said to be sentir, as an oak tree may be said to be the acorn. We must only remember that an acorn is far more wonderful than an oak tree, and perceiving far more wonderful than thinking.

The fundamental character of Sensation.

What is called Locke's tenet, though it dates from a much earlier time[1], Nihil est in intellectu quod non ante fuerit in sensu, which one might translate by 'on ne pense que ce qu'on a senti,' is the truth, though it is not the whole truth. My objection

Nihil est in intellectu quod non simul sit in sensu.

[1] In a letter from Sir T. Bodley to Sir F. Bacon, dated February, 1607, we read: 'It being a maxim of all men's approving, in intellectu nihil est quod non prius fuit in sensu.' Locke lived 1632–1704.

to it is that it sounds somewhat mythological, conveying the idea as if there were two chambers, one called sense, the other intellect, and as if objects marched from one into the other. What it is really meant to show is that without sense there would be nothing for the intellect to do; or, if we prefer Kant's expression, that the intellect without sense would be empty, as sense without intellect would be blind. Locke's tenet becomes perfectly right, however, as soon as we change it into Nihil est in intellectu quod non simul sit in sensu, and Nihil est in sensu quod non simul sit in intellectu. And this has the sanction of Kant, who says in so many words, 'There is nothing in the senses that is not at the same time in the intellect;' and of a still older sage, who said: *νοῦς ὁρᾷ καὶ νοῦς ἀκούει, τἄλλα κωφὰ καὶ τυφλά.*

Can Percepts exist by themselves.

But let us now go a step further. For a long time a child, we know, though his eyes may rest on the carpet in the nursery, would have no percept, no representation of the carpet as a whole. He might miss the carpet if it were taken away, and be pleased even unto uttering shouts of delight if it were brought back. But of a carpet, as such, the young child has as yet no percept, still less any concept or name. Nay, it is quite possible in our state of society that a child may have the name for carpet, whether in the language of the nurse or in his own peculiar baby-language, long before he could be said to have a concept of it.

Dangers of Nursery Psychology.

And here I must warn all psychologists against a new danger, quite as great as that which I pointed out before in the case of animals. If there is danger from Menagerie Psycho-

logy, there is still greater danger from Nursery Psychology. Nothing is more common among psychologists than to imagine that they can study the earliest processes in the formation of the human mind by watching the awakening mental powers of a child. The illustrations taken from the nursery are not perhaps quite so fanciful as those collected from menageries, but they have often done more mischief, because they sound so much more plausible. There is probably no philosopher who has not tried to watch the development of the human mind in watching the daily manifestations of an awakening intellect in his own child. These paternal experiments are always very charming, but their inherent difficulties are insuperable. We cannot isolate the child, unless we repeat the experiment of the Emperor Frederick II; and the disturbing influences of the artificial atmosphere in which our children are brought up are such as to render all observations almost entirely useless [1].

Nothing remains here also but to examine ourselves, and by this process we shall find that, like unperceived sensations, unconceived perceptions are impossible in actual thought, though in theory they may be postulated as hidden factors in the silent growth of our mind.

In forming percepts we are not receptive or passive only, for every percept is perceived by us under the inherent conditions of our sensuous intuition, Space and Time, and sub- Space, Time, and Causality.

[1] That some useful hints may be taken from watching children is not denied. Mr. Horatio Hall's paper, 'On the Origin of Languages,' 1886, shows the advantages, but also the dangers, of observations made on this parler enfantin. Lect. on the S. L., vol. i. p. 394.

ject to what has been called the fundamental category of our mind, the category of Causality, that is, the necessity under which we are, if we think at all, of referring every impression or sensation of ours to a cause, changing it thereby into an external object. Thus sweetness, redness, coldness, or heat, which represent at first passive states of the subject only, are changed through an inherent necessity of our mind of accepting everything as effect and cause, into a cause, or into what we call an object outside ourselves. Instead of saying, as we should say while only impressed, that we are hot or cold, or that we feel sweet or red, we add that we are so because of something else, and we then proceed to say that this something else outside us is sweet, or red, or cold, or hot, such as sweet (sugar), a red (rose), cold (ice), hot (fire). What this 'something else' is, and whether it is anything at all outside us, are questions which do not concern us here. If we must have a name for it, Kant's Ding an sich seems the least objectionable, particularly if we define it as no more than 'the transcendental ground of the unity of consciousness in the synthesis of the manifold in the object of experience[1].'

The forms of space and time then follow by themselves, for we cannot but look upon all that is outside us as perceived and measured from the central standpoint of each individual ego, i.e. as being in Space; while we must likewise look upon all that passes within us as perceived and measured from the momentary standpoint occupied by each individual ego, i.e. in Time. The individual percipient must constitute both the Here and the Now for all that is

[1] T. H. Green, Works, vol. ii. p. 24.

to be perceived, otherwise the percepts would not be his percepts. This is what Kant meant when he said: 'If I take away all thought from an empirical cognition, there remains no cognition whatever of an object, for nothing is thought by mere intuition, and the fact of my senses being affected gives me nothing that relates to any object.' Instead therefore of saying that we cannot think in sight or see in thought, we should rather say that we never see without thought nor think without sight or the shadows of sight.

Percepts inseparable from Concepts.

But though in this sense all real percepts, being representations in time and space, or images, or phantasmata, are already our own work, they are still more so if we consider that in actual thought percepts always participate in the nature of concepts[1]. Most philosophers draw a sharp line of separation between percepts and concepts, because percepts are always representations of single objects, and because it is an old maxim of philosophy that there is no knowledge of single things. Nevertheless, as in the case of impressions, we may here also admit a kind of eocene period, during which percepts gradually rise towards the sphere of concepts, though the admission of such a period is again more the result of reasoning than of actual experience. The very moment we become conscious of a percept, or of an individual object, we have to comprehend it under something else, and thus to begin to conceive it, even if it be only under the most general categories of our mind. Sokrates, the moment he is named, ceases to be a mere percept.

[1] 'There is no perception without an intellectual interpretation of sensation.' T. H. Green, Works, vol. ii. p. 176.

He may be a mere individual, and the sign by which we know him may be a mere nomen proprium; but for all that, it is a name, and a name always involves a concept, even if it be so general as person, or living thing, or being. Any green, as soon as it is perceived as this green, is ipso facto perceived as like unto other greens, and as unlike yellow or blue; it is conceived as something which we afterwards call colour.

So that here again we arrive at the conclusion with which we started, namely that though sensations, percepts, and concepts may be distinguished, they are within our own mind one and indivisible. We can never know sensations except as percepts, we can never know of percepts except as incipient concepts. Each concept contains as its ingredients both percepts and sensations, but neither of these have any separate existence except as the causes of a concept. Sensations, once planted on the soil of our mind, grow into percepts and concepts, but the three can as little be torn asunder as a flower can be torn from the stem, or the stem from its seed. The three are one, and, if separated, they cease to be what they are; they die and may be preserved as withered flowers, but nothing can revive them except a new spring, or a new creative act of the mind. To quote Herder's words, though with a wider meaning, 'Our whole soul acts everywhere as one and undivided[1].'

Percepts of Animals.

It has often been said that animals have sensations and percepts, but that one ought not to ascribe to them the possession of concepts. Of the conventional animal of the philo-

[1] Noiré, Ursprung der Sprache, p. 47.

sopher this may be quite true. We have a right to conclude by analogy that it is so, provided only that we are always prepared to admit that we do not know in the least how animals philosophise, and how an ox recognises his stable-door. With this proviso I am quite ready to admit that animals may have percepts, and that they share in common with man what Kant calls the power of sensuous intuition, nay, in a certain sense what Schopenhauer calls the fundamental category of causality. Whether the absence of concepts would impart to the mental activity of animals a superiority over our mind, or an inferiority, is not a question which concerns us at present; all we have to admit is that their minds, stored with sensations and percepts only, would probably act in a way different from our own. In the mind of man percepts, pur et simple, do not exist; they are always tinged with the first rays of the dawn which precedes the full sunrise of conceptual light. And a percept which, as in man, can become a concept, is different by this very fact from a percept which, as in animals, can never grow into anything else; but what the exact difference may be no human understanding can possibly fathom, though all the more ample room is left to conjecture and fancy[1].

It is pleasant to find sometimes the results of hard philosophical labour, the work of centuries

[1] 'Mich dünkt, der Mensch würde sich, (so wie das sprachlose Thier, das in der äusseren Welt, wie in einem dunkeln, betäubenden Wellen-Meere schwimmt), ebenfalls in dem vollgestirnten Himmel der äussern Anschauung dumpf verlieren, wenn er das verworrene Leuchten nicht durch Sprache in Sternbilder abtheilte, und sich durch diese das Ganze in Theile für das Bewusstsein auflösete.' Jean Paul.

of thought, anticipated with the utmost simplicity by early philosophers, by men who hardly knew that they were philosophers. Thus, in explaining a passage in the Kaushîtaki Upanishad (III. 7), the Indian commentator says: 'The organs of sense cannot exist without pragñâ, i. e. consciousness, nor can the objects of sense be obtained without the organs of sense. Therefore, on the principle that when one thing cannot exist without another, the two are said to be identical, the objects of sense, being never found without the organs of sense, are identical with them, and the organs of sense, being never found without pragñâ or consciousness, are identical with it.' He gives as illustrations of what he here means by identity, that cloth, being never seen without threads, is identical with them, and that the false perception of silver, being never found without the mother-of-pearl, is identical with it.

An Anticipation of the inseparableness of Sensation, Perception, and Conception.

Now what is all this but a simple anticipation of what I have been trying to establish, that sensations are impossible without percepts, and percepts without concepts, just as the cloth is impossible without the threads, and the threads without the wool? That the objects of the senses are identical with the senses is a statement which goes beyond our present purpose, for we want to prove no more than that they are inseparable; but this passage from an Indian commentator is curious at all events as an anticipation of the most advanced views of European idealism.

We now come to the third and most important and most fiercely contested question, namely, whether concepts can exist without words. If the question

is put in a vague way, namely whether we can think without words or speak without thought, it is difficult to answer it. People must define what they mean by thinking, and what by speaking. If, as Descartes says, every kind of inward activity, whether sensation, pain, pleasure, dreaming or willing be called thought, no doubt we can think without words. Again, if every kind of shriek or howl, or even the sounds of real words, but taken from a foreign language, be called language, we can speak without thought. But this is begging the whole question. We do not mean by thought mere suffering of sensations, or willing of actions, nor do we mean by words mere sound. We mean by language what the Greeks called Logos, word and meaning in one, or rather something of which word and meaning are only, as it were, the two sides.

Can Concepts exist by themselves?

We may also, for certain purposes, distinguish the mere activity of thinking, as described in formal logic, from the objects of this activity; but if we ask what the immediate objects of our thinking activity are, we shall always find they are words expressing our concepts of things, but not either things or concepts. Cogitamus, sed verba cogitamus[1]. That we can conceive of concepts also, as apart from words, the very word concept would seem to prove. But we cannot be too much on our guard against that very common error that things which can be distinguished can therefore claim an independent existence. We can distinguish between the hair of our head and the skin on which it grows, but hair cannot exist, can neither live nor grow, without

[1] St. Augustin, Magister, i. p. 773. ed. Lugduni, 1563.

something on which it grows. We can distinguish between an orange and its peel, but there is no orange without peel, no peel without an orange. We can distinguish between the colours of the surface of the peel of an orange and the surface of the peel, but in rerum naturâ no colour can ever be conceived to exist without a surface, as little as a surface without colour. Two lines are very different from the angle which they enclose, but we can have no angle without the two converging lines.

The same applies to language. No one can be deceived by the argument that words have a separate existence in grammars and dictionaries, for we might say with the same right that hairs have a separate existence in wigs, or skins in boots. In a perfect language we should expect different names for living and dead hair, just as we distinguish between grass and hay. But even in our imperfect languages, we can distinguish, in German for instance, between Worte, living words, and Wörter, dead words. A word is not a mere sound to be written down or to be repeated by parrots, but a spoken and living sound; it is originally an act which, no doubt, may be repeated thoughtlessly, but which ceases to be what it is as soon as its intention is wanting or its soul has departed.

Language and Thought Inseparable.

We must now face the most important of all questions, namely whether concepts can exist without words. It is curious to observe how unwilling people are to admit that concepts without words are impossible, though at the same time they are quite willing to concede that words are impossible without concepts. It seems almost to be felt as an indignity that what is most

spiritual in us, our thoughts, should be dependent on such miserable crutches as words are supposed to be. But why are words to be called miserable crutches? They are the very limbs, ay, they may become the very wings of thought. We do not complain that we cannot move without our legs. Why then should it be thought humiliating that we cannot think without words?

That words are possible without concepts is a view most assiduously supported by one class of scholars, namely by those who see the origin of language in the imitation of natural sounds or in simple interjections. Neither of these, however, are what we mean by language, and we need not therefore examine the arguments advanced by the supporters of this view, and adopted by a certain school of philosophy.

The other view, that concepts are possible without words, is held not only by professed Conceptualists, but by many philosophers who cannot make up their mind on this point in one way or the other, as if it were possible to make even the first step in philosophy before we have clearly seen that we think in words and in nothing but words. Yet we may open book after book on logic, the science or art of thought, and we are met everywhere by the same vagueness, or, I might almost say, want of intellectual courage which keeps their authors from saying either Yes or No to this, the most momentous of all questions in philosophy—Is thought possible without words?

Mill, in his great work on Logic, cannot bring himself to say more than that 'reasoning Mill.
or inference, the principal subject of logic, is an operation which usually takes place by means of words,

and in all complicated cases can take place in no other way.' But he never shows in what other way it might be possible to reason, even though it be an exception only, without language. When he speaks of the logic of images and feelings[1], this can hardly be more than a metaphorical expression. He calls language one of the principal elements or helps of thought, but he never mentions any other instruments. He returns to the same problem again and again, but he always leaves it half decided, and with numerous limitations which show that he is not satisfied himself. 'There are thinkers,' he writes, 'who have held that language is not solely, according to a phrase generally current, an instrument of thought, but the instrument; that names, or something equivalent to them, some species of artificial signs, are necessary to reasoning; that there could be no inference, and consequently no induction, without them. But if the nature of reasoning was correctly explained in the earlier part of the present work, this opinion must be held to be an exaggeration, though of an important truth. If reasoning be from particulars to particulars, and if it consist in recognising one fact as a mark of another, or a mark of a mark of another, nothing is required to render reasoning possible, except senses and association: senses to perceive that two facts are conjoined; association, as the law by which one of those two facts raises up the idea of the other. For these mental phenomena, as well as for the belief or expectation which follows, and by which we recognise as having taken place, or as about to take place, that of which we have

[1] Examination of Sir W. Hamilton's Philosophy,' p. 385.

perceived a mark, there is evidently no need of language. And this inference of one particular fact from another is a case of induction.'

Now all this is perfectly true, and I have often dwelt on this kind of reasoning as shared in common by man and brute. Whether it is wise to call it reasoning is another question, but in the vulgar acceptation of the word it may be so called. But on the other hand, no one has more clearly shown the immense difference between this kind of sensuous reasoning and what we mean by conceptual thought-reasoning than Mill himself.

He then continues: 'It is of this sort of induction that brutes are capable; it is in this shape that uncultivated minds make almost all their inductions[1].' Here again I agree with Mill, so far as animals are concerned, but with regard to 'uncultivated minds,' I doubt whether they ever reason entirely without names, or I should rather say, I am convinced they do not.

But this is a matter that can be settled by experiment only, and, whichever way it is settled, it would not affect the general and really important question before us. Mill himself is far too serious a reasoner not to see this, but he evidently clings to some old schibboleth which he does not like entirely to discard. So having made his small reservations, he frankly acknowledges 'that though suchlike inference of an inductive character is possible without the use of signs, it would never, without them, be carried much beyond the very simple cases which we have just described, and which form, in all probability, the

[1] Logic, iv. 3, 2, 3.

limit of the reasonings of those animals to whom conventional language is unknown.' What is this but to admit that the thinking and reasoning with which alone we are concerned, cannot be carried on without general signs, universals, general names, and general propositions; that thought in fact is as inseparable from language as language is from thought? Logic, at all events, has nothing to do with the reasoning of animals, and if the reasoning of men—barring some imaginary savages—takes place by language only, what an immense benefit would a logician such as Mill have derived if he had once broken away from the prejudices against so-called Nominalism, and had studied thought where alone it has been fully realised,—in language.

In one passage he goes so far as to admit that 'language is a catalogue raisonné of the notions of all mankind[1].' This does not seem very different from Condillac's remark that all science is but a well-made language. Yet Mill attacks this remark of Condillac's with a warmth quite unusual in so mellow a reasoner. He has worked himself up into a rage against what he calls mere names, and this expression 'a mere name' is really at the root of nearly all the objections raised against the inseparability of thought and language. A mere name, however, if people would but reflect, is nothing, or is certainly what a name is not. In a desert island a wrecked sailor might call a sovereign a mere sovereign, or a mere piece of metal. But in society that sovereign means food and life. In the same manner a name in a living language is never

[1] Vol. i. p. 25.

a mere name. A name is nothing if it is not the name of a thing, a thing is nothing if it is not the thing of a name. In some places Mill seems to see this quite clearly, as clearly as the Latin language puts it before us when it places no-men by the side of no-tio. Thus he says that 'the meaning of any general name is some outward or inward phenomenon, consisting, in the last resort, of feelings [1];' and with him these feelings are all we can possibly know of things. But the spectre of Nominalism returns again, and his distrust of what is called verbal knowledge leaves him no rest. 'We think indeed,' he writes, 'to a considerable extent by means of names, but what we think of are the things called by those names (why not meant by those names?), and there cannot be a greater error than to imagine that thought can be carried on with nothing in our mind but names, or that we can make the names think for us [2].' No one, I believe, ever maintained that the names think for us, though there is a kind of thought, what Leibniz called symbolical thought, where it might be said with some truth that names think for us [3]. All I maintain is that, not only to a considerable extent, but always and altogether we think by means of names, and that things are no more to us than what we mean by their names. What we really mean by names must be settled by definition, and according as our knowledge changes, the definition and therefore the meaning of names will change. Every new addition to our experience may be said

[1] Logic, ii. 2, 4.

[2] Logic, ii. 2, 2.

[3] Mill, on Sir W. Hamilton, pp. 391–392: 'When thinking is completely symbolical, the meaning of the word is eliminated from thought, and only the word remains.'

to change, to correct, or to complete both the intension and the extension of our names, but before we can use our new knowledge, it must always have been embodied either in an old or in a new name. There may be little or much, there may be damp or dry powder in a cartridge, but without some sort of cartridge we cannot fire. So there may be little or much, there may be false or true knowledge in our names, but without some sort of name we cannot reason. How often did the ancient thinkers see quite clearly what we can only perceive after removing the thick veil of scholastic prejudice! We were told at school that it was strange that the Greeks should not have distinguished between λόγος, speech, and λόγος, reason, and it was represented as a progress towards clearer thought that later writers should have distinguished between λόγος προφορικός, the spoken word, and λόγος ἐνδιάθετος, the inner thought. No doubt it may be an advantage to be able to distinguish between two sides of the same thing, but that advantage is more than neutralised if such distinction leads us to suppose that these two sides are two different things.

The Hindus were still more philosophical in their language than the Greeks, for they called all things, (res, πράγματα,) padârtha, i.e. artha, meaning, pada, of the word, just as the schoolmen said, the essence is the meaning of a name[1].

Let us now see what other recent logicians have said on this subject.

Archbishop Whately is most outspoken. According to him Logic is entirely conversant with the use of language, and while Sir W. Hamilton

Whately.

[1] See T. H. Green, Works, vol. ii. p. 221.

deems such an opinion too absurd to be imputed to an Archbishop, Mill, as his antagonist, shows how truly the formation of concepts and the subsequent process of combining them as arguments, may be considered as processes of language[1].

Archbishop Thomson in his 'Laws of Thought (1860, p. 46) goes so far as to admit 'that we are entangled in absurdities by any theory which assumes that either element (thought and language) existed in a separate state, antecedently to the other;' yet he hesitates to draw the only conclusion which it is possible to draw from such premisses, and which Archbishop Whately had boldly drawn. Thomson.

If we consult some more modern Manuals, we find Mr. Jevons in his latest work[2]' expressing his conviction that 'we can hardly think without the proper words coming into the mind, and that we can certainly not make known to other people our thoughts and arguments, unless we use words.' Jevons.

Now, what should we say if in a manual of music we were told that we can hardly sing at all without the proper notes coming into our mind, and that we can certainly not make known to other people our songs, unless we use notes? With regard to language the latter statement, so strongly emphasised by certainly, is either a truism, or not quite true, for we can communicate our thoughts, after they have once been named, by means of hieroglyphics, pantomime, etc.

Professor Fowler in his 'Elements of Deductive Logic' is somewhat bolder, yet he too seems unwilling to pronounce definitely in favour of so great a heresy as that thought is impossible without words. He admits that it has been a constant Fowler.

[1] l. c. p. 387, note.

[2] Logic (in Science Primers), p. 23.

source of dispute among logicians and psychologists, whether it is possible to think without the aid of language. He states that all logicians are agreed that we cannot communicate our thoughts without the aid of language or of equivalent signs, and he adds that practically we do always think by means of language. And yet he pleads that a logician need not come to a decision on this point, though it may be safer, he thinks, to adopt the terminology of those authors who regard our thoughts as expressed in language rather than of those who consider or attempt to consider them (the thoughts) in themselves, as apart from their expression in words; that is to say, he himself prefers to speak of terms and propositions rather than of concepts and judgments.

Green. Professor T. H. Green, who was certainly an honest and painstaking thinker, evades a straightforward answer to this question of all questions, by the rather perfunctory remark, 'that it is hard, some say impossible, to think without expressing thought in language[1].'

Lotze. I observe the same hesitation in the work of my own old teacher, in Lotze's Logic. With him, too, the spirit is willing, but the flesh is weak. He admits that 'Logic has never concerned itself with a thought which did not make its various ideas, one after another, the object of its attention, which did not move amongst them comparing and relating them to each other, which did not symbolise abstract ideas by spatial images, which finally did not express its thoughts in the forms and construc-

[1] T. H. Green, Works, ed. R. L. Nettleship, vol. ii. p. 175.

tions of a language[1].' Yet he maintains that 'the logical meaning of a given proposition is in itself independent of the form in which language expresses it,' though he does not tell us how we can ever arrive at the logical meaning of a proposition except through language. He speaks of 'an inward act of analysis and combination which would remain the same if it employed other forms of communication,' but what other forms of communication he means he does not say. If he means numbers or hieroglyphics, I should have nothing to object, but in that case what we should really have to do would be to widen once for all the definition of language so as to make it include these earliest forms of sign-language.

Is it not extremely strange that all these modern logicians should write on the nature and laws of thought, and yet leave undecided the fundamental question, in what form our thoughts can or cannot exist? How is it possible to advance one step with safety in any branch of philosophy, but more particularly in logic, unless it has been settled once for all, either that concepts can exist without words or that they cannot.

Still, modern logicians are not alone to blame. Locke[2], who in many places seems deeply impressed with the importance of language for a right understanding of the nature of thought, admits indeed that it is almost unavoidable, in treating of mental propositions, to make use of words. 'Most men, if not all,' he says, 'in their thinking and reasoning within themselves, make use of words instead of ideas, at least when the subject of their meditation contains

Locke.

[1] Lotze, Logic, translated by B. Bosanquet, p. 476.

[2] Lect. on the Science of Language, vol. ii. p. 75.

in it complex ideas.' But what can philosophy do with such an Almost? By this Almost Locke admits the possibility of thought without language; nay, in another place, he actually imagines that men, after they had formed their ideas, might, simply for the sake of social intercourse, have chosen certain words arbitrarily as the marks of certain ideas.

Think of language which, as even Plato[1] knew, is indispensable for the very formation of thought, being invented for the sake of social intercourse! That language was meant, first of all, for ourselves, and afterwards only for others, Hobbes had perceived so clearly that he calls words, as meant for ourselves, notae, and distinguishes them from signa, the same words as used for the sake of communication. If there was only one man in the world, he says, he would require notae. The formation of thought is the first and natural purpose of language, while its communication is accidental only. Thus he defines a word: 'Nomen est vox humana, arbitratu hominis adhibita, ut sit nota qua cogitationi praeteritae cogitatio similis in animo excitari possit, quaeque in oratione disposita, et ad alios prolata signum iis sit qualis cogitatio in ipso proferente praecessit vel non praecessit[2].'

This problem, however, of the separableness or inseparableness of words and thoughts, of speech and reason, was by no means a new problem, even in the days of Locke. It occupied a prominent place in what is often contemptuously called the scholastic philosophy of the middle ages, and it is very clear that it was the neglect

Abelard.

[1] Plato, Theaet. p. 189, E: *τὸ διανοεῖσθαι λόγος, ὃν αὐτὴ πρὸς αὑτὴν ἡ ψυχὴ διεξέρχεται περὶ ὧν ἂν σκοπῇ.*

[2] Hobbes, Works, vol. ii. 4.

of that philosophy which deprived Locke and his successors of much light which they might have derived from the works of the Realists and the Nominalists. The highest objects of their philosophical discussions were no doubt very different from those which interest the modern thinkers of Europe, and their method too was often extremely formal and repellant. But if we once make allowance for that and try to translate their thoughts into the philosophical phraseology of our own time, we shall feel surprised, not only at the exactness, but at the depth of their reasoning, and ashamed of the shallowness with which modern philosophy has sometimes treated the same problems which these much despised scholastic philosophers had treated with a far more thorough appreciation of all their bearings. With regard to the problem of the true relation between language and reason, no scholastic philosopher, whether Realist or Nominalist, would have dared to propose so off-hand a solution as we find in Locke. We cannot blame Locke for having been ignorant of the discoveries which an historical and comparative study of languages has now placed within the reach of every philosopher. But Abelard was equally ignorant of those discoveries, and yet when he speaks of language and thought, he shows a very different appreciation of their mutual dependance. He would have smiled at such an idea as that of words being arbitrary signs of ideas, invented at a later time for the sake of social intercourse. In his own peculiar scholastic language he enunciated in unequivocal words the result to which his own consistent reasoning had led him: Sermo generatur ab intellectu, et generat intellectum, 'Language is generated by the intellect

and generates intellect.' Here we have nothing of arbitrary signs or social conveniences. Language, according to Abelard, is generated, not made, and in order to express the inseparableness of language and intellect, he uses the quaint yet very telling expression, that language is begotten by the intellect and the intellect by language.

Hobbes. Hobbes, who on many important points had not yet lost touch with scholastic philosophy, is equally explicit on the relation between language and thought. 'It is evident,' he says, 'that truth and falsity have no place but amongst such living creatures as use speech[1];' and in order to leave no doubt on the view which he took on this subject, he embodied it in the quaint utterance, Homo animal rationale, quia orationale.

Berkeley. While Locke, however, saw at all events that words and general ideas were completely inseparable, and argued from the absence of language in animals to the non-existence of general ideas in their minds, Berkeley, on the contrary, was so convinced that he could strip ideas of their names that in the Introduction to his Treatise concerning the Principles of Human Understanding[2] (1710) he says: 'Since therefore words are so apt to impose on the understanding [I am resolved in my enquiries to make as little use of them as possibly I can[3]]: whatever ideas I consider, I shall endeavour to take them bare and naked into my view, keeping out of my thoughts, so far as I am able, those names which long and constant use have so strictly united with them.'

[1] Hobbes, Works, vol. i. p. 36.

[2] Works, ed. Fraser, vol. i. p. 152.

[3] This Irish bull was omitted in the second edition.

Hume accepts Berkeley's view that we have no general ideas (percepts), but only particular ones to which a certain term has been annexed, Hume. which gives them a more extensive signification, but whether he thinks that we can have ideas with this more extensive signification without such terms, he does not say; at least I have not been able to find any decisive passage on this subject.

Leibniz has to confess, though it seems as if almost unwillingly, that thought without words is Leibniz. impossible. In the Dialogus de connexione inter res et verba (1679) he says: 'Hoc unum me male habet quod numquam a me ullam veritatem agnosci, inveniri, probari animadverto nisi vocabulis vel aliis signis in animo adhibitis.' To which A. answers: 'Imo si characteres abessent, numquam quicquam distincte cogitaremus neque ratiocinaremur[1].'

It is difficult to find out exactly what Kant thought of the relation of language to thought. He Kant. does indeed call language the greatest, but not the only, instrument for understanding ourselves and others. He declares that to think is to speak with oneself, (Anthropologie, § 36). When treating of technical terms, he admits that without an expression accurately corresponding to its concept, we cannot become quite intelligible either to ourselves or to others. But all this is very different from a clear perception that without language thought is altogether impossible.

But if Kant is undecided in his views on language and on the relation of language to thought, Hamann. nothing can be more explicit than the utterances of

[1] Leibniz, ed. Erdmann, p. 77; Gerber, Sprache und Erkennen, p. 144.

his contemporary and friend Hamann, who, on account of his short and telling oracular sayings, was often called the Magus of the North. 'Language,' he says, 'is not only the foundation for the whole faculty of thinking, but the central point also from which proceeds the misunderstanding of reason by herself[1].' And again: 'The question with me is not, What is reason? but, What is language? And here I suspect is the ground of the paralogisms and antinomies with which Reason is charged.' And again: 'Here I feel almost inclined to believe that our whole philosophy consists more of language than of reason, and the misunderstanding of numberless words, the prosopopoeias of the most arbitrary abstraction, the antitheses τῆς ψευδωνύμου γνώσεως; nay, the commonest figures of speech of the sensus communis have produced a whole world of problems, which can no more be raised than solved. What we want is a "Grammar of Reason[2]."'

Herder.

About the same time that Kant proclaimed his new philosophy, the historical school in Germany, founded by Herder, was working hard to show that what had been anticipated by mediæval philosophers, the inseparableness of language and thought, could to a certain extent be proved by the evidence of history, though what they called history, the relics of popular tradition, of ancient religion, of universal mythology, and of language, reached far beyond the horizon of the ordinary historian. Herder convinced himself and declared in words that could not be mistaken that 'without language man could never

[1] Gildemeister, Hamann's Leben und Schriften, vol. iii. p. 71.

[2] Kant's Critique of Pure Reason, translated by M. M., vol. i. p. xxix.

have come to his reason,' and, we might add, 'to his senses[1].'

Schleiermacher, who greatly influenced German thought at the beginning of our century, wrote: 'Thinking and speaking are so entirely one that we can only distinguish them as internal and external, nay even as internal every thought is already a word[2].' Schleiermacher.

W. von Humboldt, whose authority both as a scholar and as a thinker was equally great during that heroic epoch of German scholarship, declared again and again in favour of the inseparableness of language and thought. 'If we separate intellect and language,' he writes, 'such a separation does not exist in reality.' . . . 'The language of a people is its mind and its mind is its language; we can never conceive the two as sufficiently identical[3].' W. von Humboldt.

Philosophers by profession also, such as Schelling and Hegel, repeat the same words, but none of them seems to have had a suspicion how, if these words are true, all that we call philosophy will have to be placed on a completely new footing[4].

Schelling says: 'Without language it is impossible to conceive philosophical, nay, even any human consciousness.' Schelling.

Hegel declared in so many words that 'we think in names.' Hegel.

Schopenhauer, generally so much more bold and

[1] Herder, Ideen zu Geschichte der Menschheit, p. 131.

[2] Dialektik, p. 449.

[3] Verschiedenheit des menschlichen Sprachbaus, vol. ii. p. 52, ed. Pott.

[4] Lect. on the Science of Language, vol. ii. p. 77.

keen-sighted than either, expresses himself somewhat obscurely when he says[1], 'Thoughts die the moment they are embodied in words.' This might seem to be but another metaphorical way of expressing what Abelard said, that intellect gives birth to language and language to intellect. But Schopenhauer is really still entangled in the old distinction between sound and meaning. 'So important an instrument of the intellect as the concept,' he says, 'cannot be identical with the word, a mere sound.' Certainly not, if there ever had been such a thing as a mere word, or a mere sound. 'Nevertheless,' he adds, 'the concept is a presentation the clear consciousness and preservation of which depends on the word.' And lastly, as if to show that he could not satisfy himself, he repeats: 'Nevertheless the concept is totally distinct both from the word on which it depends, and from the perceptions from which it has sprung.' This settles his position with regard to this problem, and will justify my remark that Schopenhauer never reasoned out the true relation between words and thoughts.

Schopenhauer.

I referred before to Mill's views on language and thought, and the want of precision in determining their true relation to one another. I must return to him once more. My former extracts were chiefly taken from his 'Logic.' In some of his later writings, however, Mill seems more and more to admit that thinking, in the true sense of the word, is impossible without words. This comes out chiefly in his 'Examination of Sir William

Mill and Hamilton.

[1] Paralipomena, ii. p. 52. See, however, Welt als W. und V., p. 511. Ethik, p. 148.

Hamilton's Philosophy.' Sir William Hamilton held that the concept must always precede the name[1], and he defends his opinion by very telling illustrations. 'Language,' he says[2], 'is the attribution of signs to our cognitions of things. But as a cognition must have been already there, before it could receive a sign, consequently, that knowledge which is denoted by the formation and application of a word must have preceded the symbol which denotes it.' 'A sign,' however, 'is necessary to give stability to our intellectual progess,—to establish each step in our advance as a new starting-point for our advance to another beyond. A country may be overrun by an armed host, but it is only conquered by the establishment of fortresses. Words are the fortresses of thought. They enable us to realise our dominion over what we have already overrun in thought; to make every intellectual conquest the basis of operations for others still beyond.'

This is a most happy illustration, and the next is happier still.

'You have all heard of the process of tunnelling—of tunnelling through a sand-bank. In this operation it is impossible to succeed, unless every foot, nay almost every inch in our progress, be secured by an arch of masonry, before we attempt the excavation of another. Now, language is to the mind precisely

[1] 'Prétendre que dans l'esprit humain la notion de la chose signifiée ne précède pas celle du signe, que l'homme spontané crée le symbole avant de savoir bien précisément ce qu'il y met, c'eût été vraisemblablement parler une langue inintelligible en un temps où l'on était convaincu que l'esprit humain avait toujours procédé selon les règles tracées par l'abbé de Condillac.'—Renan, Étude d'histoire religieuse, p. 11.

[2] Examination, p. 379.

what the arch is to the tunnel. The power of thinking and the power of excavation are not dependent on the words in the one case, or the mason-work in the other; but without these subsidiaries, neither process could be carried on beyond its rudimentary commencement. Though, therefore, we allow that every movement forward in language must be determined by an antecedent movement forward in thought; still, unless thought be accompanied at each point of its evolution by a corresponding evolution of language, its further development is arrested.'

Nothing could be a more accurate and a more telling simile of the progress of thought and language than the progress of excavation and arching in a tunnel through a sand-bank. It is extremely difficult to express the simultaneity of these two acts. The author of the *Khândogya* Upanishad, for instance, did his best. 'What a man thinks with his mind,' he says, 'that he speaks with his tongue, so says the *Sruti* (revelation).' He uses the present in both sentences, yet the commentator spoils all by interpreting: 'the employment of the tongue is preceded by the mind.' We might well be satisfied with this almost contemporaneous progress of thinking and naming, as here described by Sir W. Hamilton. But, curiously enough, Mill, in criticising Sir W. Hamilton, is not satisfied, but somewhat suddenly insists that concepts, or what are called general notions, cannot be formed without the aid of signs[1]; nay, he makes another step in advance by seeing that these signs need not be conventional or artificial, but are natural signs. He now concludes[2] that we think by

[1] P. 384. [2] P. 386.

means of ideas of concrete phenomena, such as are presented in experience or represented in imagination, and by means of names, which, being in a peculiar manner associated with certain elements of the concrete images, arrest our attention on those elements. And again: 'To say that we think by means of concepts, is only a circuitous and obscure way of saying that we think by means of general or class names[1].'

We thus see that Mill, when once brought face to face with philosophers who hold that concepts come first and names afterwards, that we can think in concepts, though it is easier to think in names, goes far beyond his own original position, and is in fact in possession of the whole truth when he comes to perceive that names are natural, and not artificial signs. If he had seen that nomen, name, is the result of notio, which is the act, though often taken for the result of the act, like conceptio for conceptum, he would have understood in what sense the act and the result may be distinguished as well as identified. An understanding of the true relation between notio and nomen would likewise have supplied the best foundation for Sir W. Hamilton's somewhat obscure theory of the identity of Conceptualism and Nominalism which so often rouses Mill's anger, and yet is not very different from his own final view that we think by means of ideas and of names.

Dr. Mansel, with whom I discussed these questions many years ago, though in other respects a sworn follower of Sir W. Hamilton, goes beyond Mansel.

[1] P. 387.

him in his conviction that language is simply and altogether inseparable from thought. Thus he writes[1]: 'That language (verbal or other) is inseparable from thought is rendered morally certain by the impossibility under which we labour of forming universal notions without the aid of voluntary symbols. The instant we advance beyond the perception of that which is present now and here, our knowledge can be only representative; as soon as we rise above the individual object, our representative sign must be arbitrary. The phantasms of imagination may have more or less resemblance to the objects of sense; but they bear that resemblance solely by virtue of being, like those objects themselves, individual. I may recall to mind, with more or less vividness, the features of an absent friend, as I may paint his portrait with more or less accuracy; but the likeness in neither case ceases to be the individual representation of an individual man. But my conception of a man in general can attain universality only by surrendering resemblance; it becomes the representative of all mankind only because it has no special likeness to any one man.'

And in another place he says: 'As a matter of necessity men must think by symbols; as a matter of fact, they do think by language[2].'

But we have now to ask the question, which to my mind is most perplexing, How was it possible that not one of those philosophers, not even those who fully recognised the inseparableness of language and thought, should have seen that this discovery of the

[1] Letters, Lectures, and Reviews, p. 8.

[2] North British Review, 1850.

true relation of language and thought, or what may truly be called this revelation of the oneness of thought and language, means a complete revolution in philosophy? How is it, that what may be called public opinion among philosophers has always shrunk from freely recognising this discovery, and that we still hear the same halting and hesitating judgments, the same weak and wavering objections which have been disposed of again and again by the students of the Science of Language, and yet rise to the surface again and again?

What follows from the inseparableness of language and thought.

I thought that in my previous writings I had answered all objections that could possibly be raised against the fundamental tenet of the Science of Language, namely, the inseparableness of thought and speech. A few remonstrances, however, have lately been addressed to me again from quarters where I should least have expected them, and I feel obliged therefore, before proceeding further, to repeat once more a part at least of what I have so often said before.

Answers to objections to the inseparableness of words and concepts.

I have freely and fully admitted that thoughts may exist without words, because other signs may take the place of words. Five fingers or five lines are quite sufficient to convey the concept of five, between people speaking different languages, possibly between deaf and dumb people who speak no language at all.

Other signs besides words.

Thus the hand may become the sign for five, both hands for ten, hands and feet for twenty. Three fingers are as good as three strokes, three strokes are as good as three clicks of the tongue, three clicks of the tongue are as good as the sound three, or trois,

or drei, or shalosh in Hebrew, or san in Chinese. It is also quite possible, after words and concepts have been framed, to represent these once more algebraically. But all these concessions may readily be made without in the least affecting the general proposition, that thoughts are impossible without words, or if it is necessary to add what is perfectly understood, without some other signs answering the same purpose as words. Anybody, for instance, who knows the hieroglyphic inscriptions of Egypt, or the Chinese system of writing, knows how easy it is to write not only words, but whole sentences by ideographic signs, which signs need not be pronounced at all, or may be pronounced differently in different languages, just as the numerals are, or the astronomical signs for sun, moon, the planets, etc., in our modern almanacks. We may even go a step further by using algebraic signs. Here there is nothing left to remind us of either words or their meanings. We are reckoning, not with signs of concepts, but with signs of signs; yet in the end we always return from the nota notae to what is denoted by the first nota.

New objects, how named.

The next objection arises from a mere abuse of language. It is said that when for the first time we see a strange animal, of which we do not know the name, we can still think it, remember it, refer to it, without having as yet a name for it. But is 'strange animal,' no name? Although in seeing a strange animal for the first time, we should have no proper name for it, we should nevertheless be able to think of it at once under the proximum genus, and this proximum genus would probably have a name. The nameless object would be conceived and named as an animal

or a living thing, possibly as a mammal, or a bird, or a fish, or again as something like something else that has a name.

We see this process well illustrated in a story told by Captain Cook. He was much astonished, he says, at the incredible ignorance of the Hervey Islanders [1], in making the strange mistake of calling the sheep and goats on board the 'Resolution,' 'birds.' The word actually used was Manu. This means any living thing moving on the earth or through the air. The term is applied also to human beings, as well as to birds. Therefore, in calling sheep and goats birds the Atiuans did really nothing more foolish than what we all should do in trying to conceive and name a new animal; they laid hold of it by the nearest genus that had a name, viz. manu, meaning a living or a moving thing, adding to it in course of time some distinctive mark [2]. The Delaware word for horse means 'the four-footed animal which carries on his back.' Red Indians call a school-house by a word which means 'a stopping-place where sorcery is practised,' their notion of book-learning being that it belongs to the uncanny arts.

The Romans thought of the elephant as Bos Luca or Lucanus [3], and the New Zealanders of

[1] W. Gill, Savage Life in Polynesia, p. 188.

[2] Every word may thus be represented by M=G+d; see Lotze, Logic, p. 157.

[3] Varro, L. L., 7. 3. 89, par. 39, ed. Müller. Varro is inclined to derive Luca from lux, but he quotes the true derivation also: 'Quod nostri, quum maximam quadrupedem, quam ipsi haberent, vocarent bovem, et in Lucanis, Pyrrhi bello, primum vidissent apud hostes elephantos, id est, quadrupedes cornutos (nam quos dentes multi dicunt sunt cornua), Lucanam bovem quod putabant, Lucam bovem appellassent.'

swine as large dogs. Every step we make in approaching the exact concept of a new object is a step in language, and without language not a single step could be made.

Inexpressible thoughts.

And what applies to cases where we have to think, that is, to speak to ourselves, of new objects which we see clearly before us, though we know not yet where to place them, applies also to cases where our thoughts seem altogether vague and obscure. We speak even of inexpressible thoughts, by which we generally mean mere states of feeling, which can never be rendered into language except approximately, metaphorically, or poetically[1]. Sometimes we feel dissatisfied at the imperfection of language which compels us to seek among old words some that seem appropriate for our new purposes, or to trust to composition, or lastly to try what can be done by making a new word out of the materials accumulated in our own, or even in foreign languages. But all this only serves to show that thought without words is impossible.

Other objections have been made, and I need hardly say that all of them have been for a time urged most strongly by myself and against myself; but their examination has only served to confirm the fact that thoughts and words are inseparable, and that neither of them can have any independent existence.

Foreign words.

It has been said, for instance, that there are certain words which are absent in English, French, or German, while what they signify is well known even to those who borrow the foreign expression. In French there is no word for

[1] Lotze, Logic, book ii. chap. i.

standing[1], yet no one would say that the concept of standing was unknown to any Frenchman, particularly if he knew the Latin stare.

All we can say is that the French language has lost by accident, if there is accident in the growth of language, or in reality for phonetic reasons[2], the short and very useful verb expressing to stand in the most general way. But its place has been taken by other expressions, such as être debout.

Again, it happens that a language forms concepts and words, which in course of time become so specialised or localised that it is impossible to translate them adequately into any other language. Thus in French, naïf was originally no more than nativus, but with a people who valued artificial refinement so highly as the French the charm of anything really native or natural became likewise refined and almost artificial, and hence the peculiar colouring of the French conceit conveyed in naïf. No one has the correct concept of the French naïf who has not studied the French character and the history of French literature, and the very fact that this French concept can be successfully conveyed in a French word only, so far from telling against us, serves again to confirm the opinion that thoughts and words are inseparable.

So many sentiments and recollections have gathered round the English word gentleman, that hardly two people use the word in exactly the same sense. Gentilhomme is the same word, but conveys no

[1] Schopenhauer, vi. 602.

[2] Such forms as sto, stas, stat, would have become almost undistinguishable in modern French. Derivations of stare remained in French, such as station, état, été, etc.

longer the same concept, whereas the German Edelmann has so much deviated from its original purport that it had to be replaced by a new term, namely Ehrenmann.

The concepts conveyed by these words are extremely complicated, they are like agglomerates of the smallest stones that have been tossed for centuries by the waves of the sea, rolled together, smoothed and polished. They can exist in their completeness once, and once only; and here again the fact that such concepts can be conveyed by one word only, and that, even after we have appropriated the foreign concept, we have to borrow the foreign word if we wish accurately to convey the foreign concept, shows clearly that concepts and words live one and the same life. The words, as we find them in Dictionaries, are, as it were, mere mummies, the words as they live in the language of each successive generation are their living descendants, and, as long as they live, they live by the unity of sound and meaning, and by that constant, yet independent, change both in their sound and in their meaning which constitutes the true life and development of language.

Experiments to prove that thought is impossible without words.

If, however, it should still seem doubtful whether thought is really impossible except in the shape of words, nothing remains but that those who doubt should try a practical experiment which, as in physical so in mental science, ought to be the best test of truth. Let every reader, whether English, French, or German, try as hard as he can, for at least five minutes, to think the saying of Descartes, Cogito ergo sum, without allowing either these Latin words, or their English, French, or German equivalents,

'I think, therefore I am,' 'Je pense, partant je suis,' 'Ich denke, also bin ich,' to pass through their minds. If the result is, as I expect it will be, Non possumus, then I hope that the experiment will have supplied what may have been wanting in the convincing strength of the argument. It might be said, however, that this is too complicated a sentence, and that, with regard to complicated sentences, even Mill is ready to admit, if not the necessity, at least the usefulness of language. We shall therefore proceed to prove that even so simple a concept as Dog is impossible without language.

Speaking in the stomach.

Some of the Polynesians would seem to have a far truer insight into the nature of thought and language than some of our modern philosophers, for they call thinking 'speaking in the stomach.' There is far more truth in this expression than at first sight appears. To speak in the stomach means of course to speak inaudibly, and it is this not only low, but absolutely inaudible speaking which is so often mistaken for thought without words. An inaudible word seems a contradiction, but it is not, as little as an invisible image. We can by our imagination see the face of a friend more or less vaguely, but sufficiently clear to distinguish it from other images, and we can by a similar effort of imagination recall the sound of music without humming or producing a single vibration of air, though not without a sympathetic accompaniment of such movements of the muscles as would be required to produce the various vibrations in actual loud singing. Nay, sometimes, without our being aware of it, some of these inner notes will break forth audibly and startle us. Exactly the same

process takes place in this so-called speaking in the stomach. The old words are repeated inaudibly, though with the same sympathetic accompaniment of certain muscles, and they are repeated in so abbreviated a form and in such compact and habitual clusters that nothing seems more quick than this so-called thought, nothing so slow as loud articulate speech. Then arises by practice and discipline a kind of algebra of language which is so surprising in its swiftness that the new name which is often given to it, namely thought without language, seems almost justified. Yet without previous language not one step in that algebraic exercise would have been possible, and I doubt therefore whether a truer name for this inaudible speaking and thinking can be found than the Polynesian expression 'speaking in the stomach.'

The Dog-Experiment.

With these preliminary remarks I now proceed to describe a counter-experiment, or rather the fruitless efforts which some philosophers have made in order to prove that they could conceive a simple concept, at least, such as dog, without having a name for it. I have described the same experiment before, and if it seemed childish, all I can say is that this is not my fault. We are told that people have to begin by shutting their eyes and ears, and holding their breath. They then sink into some kind of semi-consciousness, and when all is dark and still, they try their new art of ventriloquism, thinking thought without words. They begin with a very simple case. They want to conjure up the thought of a . . . . . I must not say what, for it is to be a nameless thing, and every time that its name rises, it is gulped down and ordered away.

However, in confidence, I may whisper that they want to conjure up the thought of a dog.

Now the word dog is determinately suppressed; hound, cur, and all the rest, too, are strictly excluded. Then begins the work. 'Rise up, thou quadruped with ears and a wagging tail!' But alas! the charm is broken already. Quadruped, ears, tail, wagging, all are words which cannot be admitted.

Silence is restored, and a new effort begins. This time there is to be nothing about quadruped, or animal, or hairy brute. The inner consciousness sinks lower, and at the last there rises a being to be developed gradually and insensibly into a dog. But alas! 'being' too is a word, and as soon as it is whispered, all the nameless dogs vanish into nothing.

A last appeal, however, remains. No animal, no being is to be talked of; complete silence is restored; no breath is drawn. There is something coming near, the ghost appears, when suddenly he is greeted by the recognising self with Bow-wow, bow-wow! Then, at last, the effort is given up as hopeless, the eyes are opened, the ears unstopped, the breath is allowed to rise again, and as soon as the word dog is uttered, the ghost appears, the concept is there, we know what we mean, we think and say Dog. Let any one try to think without words, and, if he is honest, he will confess that the process which he has gone through is somewhat like the one I have just tried to describe.

But even thus the contest is not given up. If neither arguments nor experiments avail, are there not facts, it has been said, to show that thought must be independent of language? Multiplicity of languages.

Does not the fact that there are different languages prove at once that language must be something different from thought? This sounds indeed very plausible, and the same fact was appealed to by Locke, though for a different purpose, namely in order to prove that words must have been chosen arbitrarily as marks of thoughts, because otherwise there would have been but one language on earth. The same answer which was given to Locke will also serve as an answer to those who imagine that the variety of languages proves that language is something different from thought.

It has been shown that words, though not being what they are by necessity (φύσει), are neither what they are by mere chance (θέσει), but that every one can give account of itself why it is what it is. There is perfect freedom in the formation of words, but that freedom is determined by reason. There is freedom, as we shall see, even in the formation of roots (concepts), and still greater freedom in the formation of words, and it is that very freedom which not only explains, but really necessitates the diversity of languages, or the dialectic growth of words.

Different families, tribes, and nations are perfectly free to form different concepts, such as digging, rowing, striking, and the phonetic types which convey these concepts may likewise vary ad infinitum. Still greater is the freedom with which from these phonetic types or roots new names for new concepts may be derived, so that in course of time a confusion of tongues, so far from being miraculous, becomes inevitable. If in one family the father was called nourisher or protector, pa-ter, in another begetter, τόκευς, if the father called the moon the brilliant

Luna, but the son called it Mênê, the measurer, we should have the beginning of that dialectic growth which would end in a confusion of tongues, or in the constitution of various national languages. If we can have synonyms in one and the same language, nothing is more natural than that we should have dialects, and, if we can once account for different dialects, we have accounted for the multiplicity of languages likewise. We can watch the same process in modern languages. If we suppose that in Latin words and thoughts were identical, does it prove that they are so no longer, and that language is something different from thought, because Latin has been modified dialectically till it became Italian, French, and Spanish? In some cases Italian, French, and Spanish words have the same meaning as their Latin prototypes. In other cases their meaning has been either extended or restricted, but the continuity in the growth of thought and in the growth of language has never been broken, and we find as little in Italian as in Latin any word which cannot give a full account both of its sound and of its meaning. If we had but one language for all mankind, that language would probably contain various words for the same concept, and various concepts for the same word. It would contain what all languages contain, Homonyma and Polyonyma[1]. But Homonyma and Polyonyma do not prove that concepts and words are different things, but on the contrary that every shade of meaning can be embodied in language. Day and night, for instance, may be called by twenty different names according to the twenty different ways in

[1] See Lect. on the Science of Language, vol. ii. p. 390.

which they may be conceived either as bright or dark, as warm or cold, as rousing or calming, as good or evil, as sisters or brothers, as friends or enemies. The same mountain in Switzerland is called by the people on the South side Blackhorn, by the people on the North side Whitehorn, because it is covered with snow on the North, and free from snow on the South[1]. Here we have a polyonymous mountain, while all the mountains in Switzerland which, because they are never free from snow, are called Whitehorn, are synonymous mountains. This, so far from proving that words are independent of concepts, shows that everything is named in exactly as many ways as it is conceived. In Ich denke, also bin ich, we have exactly as many acts of thought as in Cogito, ergo sum; their different phonetic form is nothing but the result of an historical, and generally perfectly intelligible evolution. The multiplicity of languages therefore, so far from proving the independent existence of thought and language, proves on the contrary their close connection, because it shows that the slightest variation in our conception of things brings about a variation in language. Luna, no doubt, is intended as a name for the same object as Mênê, but if we conceive that object as brilliant, it becomes to us Luna, if we conceive it as measurer of time, it becomes Mênê. In later times the speakers of Greek and Latin were not always aware of the conceptual meaning of these words. Words had then become traditional and almost algebraic signs. But the people who framed these words were aware of their conceptual purpose,

[1] Berlepsch, Schweizerkunde, p. 16.

and could have told us what we now have to discover with great effort for ourselves, that the variety of words and the multiplicity of languages are the best proof of the conceptual origin of language, and of the identity of thought and speech.

A final fact adduced against the theory that it is impossible to think without language, which was formerly very popular, is that deaf and dumb people cannot speak, and yet can think. At present, however, it is well known that, if they can think and reason, they have learnt it from those who use words, only substituting other signs for their words and concepts; while if they are not so taught, they never rise beyond what we may call thinking even in animals, nay, often remain entirely imbecile. I may cite the authoritative words of Professor Huxley: 'A man born dumb, notwithstanding his great cerebral mass and his inheritance of strong intellectual instincts, would be capable of few higher intellectual manifestations than an orang or a chimpanzee, if he were confined to the society of dumb associates.' And again: 'A race of dumb men, deprived of all communication with those who could speak, would be little indeed removed from the brutes. The moral and intellectual difference between them and ourselves would be practically infinite, though the naturalist should not be able to find a single shadow even of specific structural difference[1].'

Deaf and Dumb People.

I hope I have thus answered everything that has been or that can possibly be adduced against what I call the fundamental tenet of the Science of Lan-

[1] See Horatio Hale, The Origin of Languages, 1886, pp. 36, 42; Kant, Anthropologie, § 16.

guage, and what ought to become the fundamental tenet of the Science of Thought, namely that language and thought, though distinguishable, are inseparable, that no one truly thinks who does not speak, and that no one truly speaks who does not think.

Names for Thought in General.

We saw before that sensations, percepts, concepts, and names, the constituent elements of our thoughts, the known quantities which we 'co-agitate,' the numbers which in reckoning or reasoning we add or subtract, are not independent elements, but merely four different phases in the growth of what we call our Mind.

The Inner Working.

I wish we possessed a word like the Sanskrit Antaḥkaraṇa, which means the 'Working within,' and commits us to nothing else. For do what we may, as soon as we speak of Mind, we cannot help thinking of an independent Something, whether we call it an instrument or force or a faculty, which does the work for which we want a name. We think of a mind dwelling in a body, and we soon find ourselves in the midst of psychological mythology. Let it be clearly understood, therefore, that by Mind I mean nothing but that working which is going on within, embracing sensation, perception, conception, and naming, as well as the various modes of combining and separating the results of these processes for the purpose of new discovery.

Who is the Worker!

But if Mind is to be the name of the work, what is to be the name of the worker? It is not yet the Self, for the Self, in the highest sense, is a spectator only, not a worker; but it is what we may call the Ego, as personating the

Self; it is what other philosophers mean by the Monon, of which, as we shall see, there are many. Let us call therefore the worker who does the work of the mind in its various aspects, the Monon or the Ego, leaving what is behind the Monon for later consideration, and let us see what that Monon must be in order to fulfil the purpose for which we want it.

A Monon, in order to be what it is, and to do what it does, must be conscious of itself, for it requires little reflection to perceive that for a Monon (Alone) to exist, can mean nothing but to be conscious of itself. This self-consciousness, however, may or may not have been roused, or, at all events, it may have been modified through the impact produced on it by other Mona, but even thus it remains throughout self-conscious only, i. e. conscious of itself as modified by something not itself. Physically speaking we may conceive the Monon as resisting the impacts made upon it by other Mona, as yielding for a moment and recovering itself. This resistance produces vibration, and these vibrations, being the vibrations of a conscious Monon, would be, in the widest sense of the word, what we call sensations.

These sensations, however, would be mere states, or modifications of the Monon, unless the Monon postulated for them a cause without, and thus changed all sensations into objects, which objects, being subject to the a priori conditions of our sensuous intuition, must be in space and in time. For all this we require no separate instruments, unless we give that name to the five receptive organs, eye, ear, nose, tongue, and skin. What these vibratory organs really are we must leave to the physiologist to explain, and it is well

Space, Time, and Cause.

known how rapid the progress of physiological discovery has been of late in this important field of research. We have here to accept these discoveries simply as given facts. We may ascribe the change of a sensation into an object to the category of causality, but that is only a scholastic term, and means no more than that we must think and speak of a sensation as caused by something without us. What should we be, if we did not do that? If we are to be at all, we must be what we are. We may call Space and Time forms of sensuous intuition, but this again means no more than that we must look upon a cause without us as different and therefore distant from us, here or there; and upon a cause of a continuing sensation as remaining with us in the present, in the past, and in the future. And again I ask, what should we be, if we did not do that?

Time-sense and Space-sense.

Professor Prantl[1] has lately dwelt very strongly on what was pointed out by Kant, namely that this intuition of things in time or continuous succession, what he calls the Time-sense (Zeitsinn), is really the first beginning of counting, reckoning, reasoning, and speaking, all comprised under λόγος by the Greeks. Schopenhauer also held the same view, that 'sensation' is something essentially subjective, and its changes are brought to our cognisance in the form of internal sense only, therefore in time, i.e. in succession[2]. This is perfectly true, though the Space-sense seems to me equally important for that purpose.

[1] Prantl, Reformgedanken zur Logik, p. 184.

[2] Liebmann, Objectiver Anblick, p. 114.

To see the same thing in the same place at different times is certainly the first impulse to counting, while from counting there is but a small step to adding and subtracting which, as we saw, is conceiving or reasoning. To give an instance. If I see or feel or know my hand doing the same thing, say digging, in the same place at different times, that is to say, if I perceive or know myself digging, that knowledge is to all intents and purposes a concept, and, if embodied in the sound which often accompanies the act of digging, a word. And if I see or feel or know my right hand and my left hand, that is, different things which I take to be the same, doing the same thing, say digging, cutting, or striking in different places, that knowledge of the two hands as working together and forming a pair is the first Dyad, and a Dyad is, to all intents and purposes, the first concept.

The sufficiency of a self-conscious Monon.

All this is the work, and I should say the inevitable work of a conscious Monon. Grant a Monon conscious of itself, and conscious therefore of the impacts made upon it or the changes produced in it by other Mona which it resists, and we require little more to explain all that we are accustomed to call Thought. It may be said that this is asking for a great deal, but whatever subject we treat of, we must ask certain things to be granted us, we must draw a boundary line where our work is to begin, and leave the adjoining fields to be cultivated by our neighbours. And we can do this in our own case all the more readily, because our neighbours, the physiological psychologists, assure us that they can fully account for the impacts, the irritations or the impressions of our senses, while we

ourselves are willing to take up our own work, as soon as the vibrations of a self-conscious Monon are given us.

If it should seem that in taking the sensuous impressions simply for granted or leaving them unexplained, I am building a whole system of philosophy on mere sand, I may appeal in self-defence to the example of some of the greatest philosophers who have claimed the same privilege. Thus Hume in his 'Treatise on Human Nature' writes (I. 3. 5, ed. Green, i. p. 385): 'As to those impressions, which arise from the senses, their ultimate cause is, in my opinion, perfectly inexplicable by human reason, and 'twill always be impossible to decide with certainty whether they arise immediately from the object, or are prǫduc'd by the creative power of the mind, or are deriv'd from the author of our being. Nor is such a question any way material to our present purpose. We may draw inferences from the coherence of our perceptions, whether they be true or false; whether they represent nature justly, or be mere illusions of the senses.'

Taking therefore the impacts of Mona on the Monon for granted, we may call the resistance and the concomitant vibrations of the self-conscious Monon, sensation; the change of sensations into intuitions of objects in space and time, perception, and the counting of such perceptions, and their addition and subtraction, conception, this conception being always realised in signs or words. We want no more. We want no longer any innate ideas, any new faculties, or separate instruments in order to explain all the work that is going on within. Even the category of causality and the intuitions of space and time are to us inevitable

conditions of a contact between the self-conscious Monon and other Mona which it withstands; while the gathering of two or more percepts into one concept must be explained as the natural result of the Time-sense and Space-sense, that is, our permanent consciousness of objects in space and time.

There are no such things as Mind, Memory, Reason, etc.

To say that there are no such things as Mind, Memory, Reason, Understanding, etc. may sound very terrible to those philosophers who imagine that the dignity of man consists in his possessing a soul, a mind, a memory, an intellect, an understanding, a reason, and whatever other powers and faculties or instruments have been called into being by the fertile imagination of psychologists. I do not object to the use of any of these names, so long as they are understood to be no more than the names of certain modes of action on the part of a self-conscious Monon. But I certainly deny that there are any such things as soul, mind, memory, intellect, understanding, and reason, or that the conscious Monon can be said to be endowed with them, whether in the shape of separate faculties or useful instruments. I admit nothing but the self-conscious Monon, which must be conscious, if it is to exist at all; everything else can be shown to be the result of an inevitable development. If Mill explains matter as the permanent possibility of sensation, i.e. of being perceived (On Hamilton, p. 198), we may in the same manner explain mind as the permanent possibility of sensation, i.e. of perceiving. Or, to put it in a different form, if the esse of things is percipi, the esse of mind is percipere.

I know that many philosophers, even those who

generally agree with me, will object to this extreme Monism, and maintain that the self-conscious Monon must be admitted to be endowed at least with the forms of sensuous intuition, space and time, and with the category of causality. I do not deny it, I only say that these are technical and scholastic names for what we have to recognise as inevitable modes of action in the self-conscious Monon in its acquisition of what we call sensations, percepts, concepts, and names.

What is Memory?

Nor do I deny that every self-conscious Monon possesses memory, or, if philosophers prefer that name, the faculty of memory. All I wish to maintain is that what we call memory is no more than the persistence of force which manifests itself in sensation, perception, conception, and language, as well as everywhere else. If every sensation, percept, concept, and word vanished as soon as it appeared, we should be at a loss to explain what became of them. That the effects which they represent should be permanent, though they may be modified, is what we expect; that they should disappear without leaving a trace behind, would be, I think, a perfect miracle. No vibration, not even that on the surface of a lake, ever perishes entirely. If then we must have a name for that imaginary storehouse in which the materials of thought, whether sensations, percepts, concepts, or words, are garnered, and for the power of preserving and reproducing these materials whenever they are wanted, let us by all means use the name of memory, only let us bear in mind that it is the name of an inevitable effect, produced by what in nature we call the persistence of force, or what in logic we express by $A = A$, and that what has really to be accounted

for, is our power of partial forgetfulness, not our power of remembering. Let the name of Memory be used by all means for all sensations, percepts, concepts, and names which we retain and which constitute our intellectual wealth, and let us use Reason or Reasoning for the process which produces what logicians call terms, propositions, and syllogisms,—these being, as we shall see, the same processes under new names which from the first produced the wealth garnered in our memory; but let us never forget that neither to remember nor to reason implies the possession of a thing, called reason or memory, but that to remember implies simply the permanence of the former acts of a self-conscious Monon, while to reason is no more than a continuation, under different aspects, of the same act which produced names in which alone all our sensations, percepts, concepts can be realised.

Loss and Gain.

We need not imagine that we are poorer, because we have lost what we really never possessed. It may be quite true that we possess neither mind, nor memory, nor reason, that even the name of soul has become superfluous. But for all that, we remain exactly as we were before, only we understand ourselves better, and that seems to me always a gain, and not a loss.

So powerful, however, is the reaction of words on thought, that as soon as we throw away a word, or attempt to define its meaning, everybody thinks that he is being robbed. But the sun rises just the same, though we say now, that it does not rise. The moon has not been minished, though she has been waning for thousands of years. And all our mental life will remain just the same, though we deny that there

are such things as mind, intellect, understanding, and reason. All the various shades or developments of sensation from the first to the last were doubtless distinguished and named for some very useful purpose, and each may have served its purpose for a time. The mischief began when they became too numerous, each thinker contributing his own share, while later thinkers seemed to consider themselves in honour bound, whenever there were different names, to assign to each its own small province. Because in German there are two words, Verstand and Vernunft, originally meant for exactly the same thing, the greatest efforts have been made to show that there is something to be called Vernunft, totally different from what is called Verstand, till at last Vernunft was changed into a mere name for Unverstand, or the power of suggesting insoluble problems[1]. And as there is a Vernunft by the side of a Verstand in German, English philosophers have been most anxious to introduce the same distinction between understanding and reason into English.

Nothing varies so much as the meaning of philosophical terms, for everybody thinks he has a right to define them, or even to use them without any definition. Thus, as Paulsen has shown, the German word Begriff, which now means concept only, meant not very long ago a percept or a Vorstellung. In a Manual of Logic by Meier, which was used by Kant, we read: 'Ein Begriff, conceptus, ist eine Vorstellung einer Sache in einem Dinge, welches das Vermögen des Denkens besitzt. Es sind darnach alle unsere Vorstellungen Begriffe.' And in Reimarus'

[1] See T. H. Green, Works, vol. ii. p. 88.

Vernunftlehre, paragraph 30, we read: 'Begriff gleich Denkbild oder Idee, ist jede einzelne Vorstellung, (also vor allem auch die Sensation).'

No word has changed more in its meaning than Idea, and none is answerable for greater confusion of thought[1]. It is impossible to understand Locke, Berkeley, or Hume, unless we know that idea with them means a percept, fresh or faded, and that Berkeley's crusade against abstract general ideas is really directed against percepts supposed to be general and abstract. Jacobi called Berkeley a Nihilist, others called him an Egoist, he is now called an Idealist, a name which the contemporaries and opponents of Kant seem to have considered quite as offensive as that of Nihilist is now.

At last there arises a complete psychological mythology. Because the Monon could reason or because it became rationalis, it was said to possess reason, and this reason, after being spelt with a capital R, was accepted as something real, though invisible, was praised as divine in rapturous rhapsodies, till at last it was worshipped as the Goddess o Reason in the streets of Paris. What would the French mob have said, if they had been told that in worshipping the Goddess of Reason they were worshipping 'Addition and Subtraction'? Yet so it was, and possibly addition and subtraction were something far more perfect and wonderful than the Goddess of Reason before which they knelt and burnt incense.

Even Kant when he speaks of reason as a separate thing seems to me guilty of mythology. It is

[1] See Stoddart, Glossology, pp. 33², 343.

sheer philosophical polytheism to speak of sense, mind, reason, intellect, understanding, as so many independent powers, with limits not very sharply defined; and however orthodox that polytheism has become, it is never too late to protest against it. In religious mythology too, names which were at first intended as cognomina only, have been changed into nomina, and at last into independent Numina. A man is not, however, to be called an heretic because he does not believe in Hekatebolos as a being different from Apollo, or in Charis as a goddess different from Aphrodite, nor an Atheist because he believes in one God only. Nor is a philosopher to be called hard names because he does not believe in mind, reason, understanding, or intellect, as so many independent substances, powers, faculties, or goddesses, or because he sees in all of these but the different manifestations of one and the same being, the conscious Monon.

Let it not be supposed that I am so bigoted a Monist as to wish to see all these names banished from our philosophical dictionaries. I do not wish to see them banished, I only wish to see them purified, or restored to their original meaning. I myself use sense, when speaking of the Monon, so far as it may be conceived as simply receiving; I use imagination, for want of a better name, when I speak of the Monon, so far as it can be conceived as forming percepts; I use intellect rather than reason, when I speak of the Monon, so far as it can be conceived as simply conceiving; and I use language, when I speak of the Monon, so far as it can be conceived as simply speaking.

I do not object to the use of the word memory,

if we want to speak of the permanence of the work done by sensation, perception, conception and naming, and if some philosophers prefer to speak of the faculty of memory, I cannot consider it as high treason. It seems to me mere pedantry to rave against such a word as faculty, a term which is extremely useful and perfectly harmless, if only we bear in mind that facultas, the opposite of difficultas, is no more than facilitas, a modus faciendi, as agility is a modus agendi, and in that sense quite as good a word as function, which has found more favour of late in the eyes of philosophical purists. We may safely enjoy the wealth of language, accumulated by our fathers, if only we take care not to accept a coin for more or less than it is really worth. We must weigh our words as the ancients often weighed their coins, and not be deceived by their current value.

It is very easy to coin new terms, but they often make confusion but worse confounded. Philosophers now speak of different forms of realisation, different aspects and different modalities of psychic force, but all these terms will require the protection of a definition, and will no more escape abuse than the old faculties of the mind. As rain and sunshine were changed into gods and demons, the faculties of the mind also have sometimes been treated like green-eyed monsters seated in the dark recesses of our Self. But they only frighten those who do not know what names are made of. To the true etymologist they are no more than what they are meant to be.

Logos.

There is one word which I should like to see reintroduced into our philosophical phraseology, and that is Logos. It meant originally gathering and combining, and so became the proper

name of all that we call reason. But it has th immense advantage of also meaning language, and thus telling us that the process of gathering which begins with sensation and passes on to perception and conception reaches its full perfection only when it has become incarnate in the Logos or the word.

CHAPTER II.

THOUGHT AND LANGUAGE.

If our analysis of the human mind is right, if all that we call thought finds its last consummation in language, the next question, namely how the growth of the human mind can be studied, is easily answered: it must be studied in the history of language.

Words the signs of concepts.

This conclusion, which after the discoveries of the Science of Language seems inevitable, might have been arrived at long ago. It has always been considered as one of the glories of Locke's philosophy that he established the fact that names are not the signs of things, but in their origin always the signs of concepts. It is true that Hobbes[1] had already enunciated the same important truth, namely that words are signs of concepts and not of things. But that would in no way detract from Locke's merit, for truth is common property, and it is chiefly the use which a philosopher makes of any given truth which secures him his position in the history of philosophy. I know quite well that Mill considered this distinction between words as the signs of concepts,

[1] Computation or Logic, chap. ii. See Mill's Logic, book i. chap. ii.

and words as the signs of things as of little consequence, but this must depend altogether on the use which can be made of it. To my mind Locke's insistance on words being the signs of concepts, and not of things, is of the greatest importance for everything that is called philosophy. And even Mill, though he argues against this theory, frequently adopts it unawares. When Mill says[1] that 'a word ought to be considered as the name of that which we intend to be understood,' this is clearly our concept, and not the thing apart from our concept. Mill admits that we know nothing of the inmost nature of fire and water, that heat is not like the steam of boiling water nor the feeling of cold like the east wind[2]. But it is of these subjective sensations that our concepts are made up. Why then should Mill call it a capital error 'that the investigation of truth consists in contemplating and handling our ideas' or conceptions of things, instead of the things themselves[3]? he who in the same chapter declares that 'a previous mental conception of facts is an indispensable condition' of all thought and belief? In another place[4] Mill says, 'that in using a proper name we put a mark, not indeed upon the object itself, but, so to speak, upon the idea of the object.' But why 'so to speak,' considering that we can do nothing else? If we use a general name, if we say Dog, do we mean the thing, or our concept of it? Is there anything corresponding to Dog? Is not Dog, like every other name, the name of a thing that cannot possibly exist? Who ever saw a dog? We may see a

[1] Logic, i. 2. 4.
[2] Ib. i. 3. 7.
[3] Ib. i. 5. 1.
[4] Ib. i. 2. 5.

spaniel, or a greyhound, or a dachs-hund, we may see a black or a white or a brown dog, but a dog no human eye has ever seen. Therefore when we say dog, we can only mean our concept of a dog, that is, our concept of many or all dogs, and it is the name of that concept which we use to denote any single dog. The same with a tree. No one ever saw a tree, but only this or that fir tree, or oak tree, or apple tree; but then again, no one ever saw an apple tree, but only a few parts of it, a little of the bark, a few leaves, an apple here and there; and of all this again one side only. Tree, therefore, is a concept, and, as such, can never be seen or perceived by the senses, can never acquire any phenomenal or intuitional form. We live in two worlds, the world of sight, and the world of thought; and strange as it may sound, nothing that we think, nothing that we name, nothing that we find in our dictionary, can ever be heard, or seen, or felt. We can even have names for things which never existed, such as hobgoblins, also for things which exist no more or which exist not yet, such as the grapes of th last harvest and the grapes of the next. These can hardly be called things, as separate from our concepts of them, and our names in this case clearly refer either to what we have never seen, or what we see no longer or not yet, or at all events to what we have never seen in that form in which we conceive it. The mere fact that I call a thing past or future ought to be sufficient to show that it is my concept I am speaking of, and not the thing as independent of me.

If this is so with the names of concrete things, it must be so all the more with the names of attributes.

Attributes always abstract.

All attributes, according to the schoolmen, are abstract terms, though it does not follow that all abstract terms are attributes. All attributes are abstract terms, because in forming them we must drop that of which the attributes are attributes. We see the white snow, the white milk, the white horse, but it is only by dropping all except the white colour (I speak here of artificial or scholastic abstraction) that we get white as an attribute. Even when we speak of a white thing, we are speaking of a concept we have made for ourselves, for our experience never offers us anything that is nothing but a white thing. So whether we use white as an attribute, or whether we speak of a white thing, we speak of concepts which we have made, and the words which we use of them are names of our concepts, not names of things.

As a matter of principle, therefore, the distinction between words as signs of concepts and words as signs of things cannot be said to be of little consequence. It forms the watershed between the two great streams of philosophical thought, the nominalistic and realistic, and if we adopted the view which Mill professes to embrace, it might seem to follow, without much difficulty, that idealistic philosophers have no right to use language at all.

But this does not concern us at present. What concerns us in this place is the practical importance which the view attacked by Mill has for our own special inquiry. For if we are right in holding the opposite view, if words are indeed the signs and outward embodiments of our concepts, the origin

and growth of concepts, that is, of all human thought, need no longer be studied as a mere theory, but becomes an historical study resting on facts, namely on the facts of language. Only while Locke still looked on words as arbitrary signs, the Science of Language has taught us this new lesson, that words are neither arbitrary nor necessary, but always reasonable and intelligible signs of concepts.

If we take, for instance, such a word as name, Locke would have said that it was a sound arbitrarily chosen to signify 'what we call a thing.' Nor does the word name convey more to an ordinary speaker than this its traditional meaning, which he learns either from his parents or from a dictionary. The student might go a step further, and, by comparing other languages, he might learn that Latin, Greek, and Sanskrit contain very similar words to express the same idea, namely nomen in Latin, ὄνομα in Greek, nâman in Sanskrit. This would teach him that name in English and Name in German could at all events not have been chosen by his own Saxon ancestors, but must have existed a long time ago, when the Teutonic language had not yet branched off from Sanskrit, Greek, and Latin. The question then arises whether that word was chosen arbitrarily by the primitive framers of Aryan speech, or with an intelligent purpose. Placed under the microscope of the comparative grammarian, name, the Sanskrit nâman, is seen to consist of a root NÂ, originally GNÂ, to know, and of a suffix which generally expresses an instrument or an act. We thus perceive that name meant originally a great deal more than what we call a thing. It

Name.

was not a mere sign arbitrarily chosen, or a notch or a mark fixed at random, but it was meant to express the act or instrument of knowing. This was the original concept embodied in name: not what we call a thing, but what we know of a thing.

What applies to this word, applies to all others: they all disclose to us a rational and intelligible purpose. A saddle was called a saddle because we sit in it, a stable a stable because cattle stand in it. A serpent was called ahi, ἔχις, anguis, from AmH, to throttle; or sarpa, serpens, from SÆRP, to creep. A field was called ágra, ἀγρός, ager, from Ag, to drive, because cattle were driven over it. Goats were called aga, because they were driven, and so on ad infinitum. I gave the etymology of name, however, for two reasons: first in order to show what I mean by saying that words are never chosen arbitrarily; secondly, because it offers an independent confirmation of Locke's statement that words are the signs of concepts, and not of things. Those, whoever they were, who for the first time called words names, knew that a name expressed what they knew of a thing. What to us was the result of very hard reasoning, namely that as Hegel says, 'we think or know by names,' seems to have come as a natural insight to the early framers of our language, so that language, if but rightly interpreted, might have taught us the lesson that we know in names or think in words by the almost tautological proposition: (g)nominibus (g)noscimus, in Sanskrit, (g)nâmabhir ganîmas.

But even after both philosophy and philology had established the fact that language is thought

and thought is language, it took some time before the conclusion was drawn that the real historical development of the human mind ought to be studied in the history of language. Some writers, particularly in the last century, preferred to draw largely on their own imagination in composing the picture of what the human mind was in the beginning, and how it became what it is now. Others, in our own time, have looked among so-called modern savages for information on the primitive state of human thought. Though from both quarters some light has been thrown on this extremely difficult subject, it is generally admitted by this time that neither process can lead to anything but a few more or less plausible guesses on the origin and progress of human thought, or on the problem how man came to his senses, and to his reason, and to his language; how, in fact, man came to be man.

Language the true history of the human mind.

The true archives in which alone the historical development of the human mind can be studied are the archives of language, and these archives reach in an uninterrupted line from our own latest thought to the first word that was ever uttered by our ancestors. It is here where the human mind has left us what may be called its true autobiography, if only we are able to decipher it.

The problem which is thus placed before us is, in every respect, the counterpart of another problem which has of late engaged the attention of philosophers, I mean the evolution of nature. And as the evolution of nature can be studied with any hope of success in those products only which nature herself has

Growth of Mind and Evolution of Nature.

left us, the evolution of mind also can be effectively studied in those products only which mind itself has left us. These mental products in their earliest form are always embodied in language, and it is in language, therefore, that we must study the problem of the origin, and of the successive stages in the growth of mind. The formation of general terms, of abstract notions, of propositions, and syllogisms, in fact all that we call the work of reason, must in future be studied in language, if in the science of thought we hope for the same results which have rewarded the labours of Darwin and of other careful students of the authentic records of nature. Every one of the numberless languages which cover the earth is a stratum in the growth of thought that has to be explored. Every word is a specimen, a record of human thought, that has to be analysed and interpreted.

Parallelism between the study of Mind and Nature.

I do not mean to say that these records can always be completely deciphered, or that there are no gaps in the evolution of thought which for the present, at least, must be left as they are. But the same applies to the evolution of nature also, and yet it does not dishearten its students. Here too there remain many riddles and many breaks, and yet the general conviction that there was a continuous progress in nature from the lowest to the highest point, is not shaken thereby. In studying these two developments, that of nature and that of mind, we start from the same principles, and we aim at the same results. We ought therefore to follow the same method.

Nâmarûpa.

It is interesting to see how the parallelism of these two developments has been anticipated, vaguely, it is true, by the earliest philosophers of

India. Thus we read in the Aitareya-âranyaka Upanishad, I. 4, 7, 'All this was undeveloped; it became developed by forms and names.' We have only to substitute species, i.e. eidos, for forms, and we have here the recognition of that very parallelism which I have tried to illustrate: on the one side the development of objective nature by so-called species, on the other the development of subjective mind by names.

Was man ever without language?

But if we mean to treat the problem of the origin of reason in the same spirit in which the evolutionist treats the problem of the origin of nature, we must not shrink from the question, whether there was a time when language and, therefore, reason did not yet exist. Now, if our first tenet is right, if language and reason are identical, or two names or two aspects only of one and the same thing, and if secondly we cannot doubt that language had an historical beginning, and represents the work of man carried on through many thousands of years, we cannot avoid the conclusion that, before those many thousands of years, there was a time when the first stone of the great temple of language was laid, and that before that time man was without language, and therefore without reason.

This sounds at first very alarming, but I see no escape from it. Other philosophers too, who reason fearlessly, have arrived at the same conclusion.

The mental tubercle.

Physiologists, for instance, on comparing the oldest human skulls that have lately been discovered, have pointed out that some of them are without the mental or genial tubercle. This mental or genial tubercle has nothing to do with mens or genius, at least, not directly, but its name

is derived from mentum, chin, or γένυς or γενειάς, chin. It is, in fact, a small bony projection or excrescence, in which the muscle of the tongue is inserted. In the skull, discovered in 1866 in the cave of La Naulette, in Belgium, and described by Professor de Mortillet, that mental tubercle is absent. In place of it there is a hollow, as with monkeys. Therefore Professor de Mortillet argues: 'Speech, or articulate language, is produced by movements of the tongue in certain ways. These movements are effected mainly by the action of the muscle inserted in the genial tubercle. The existence of this tubercle is therefore essential to the possession of language. Animals which have not the power of speech do not possess the genial tubercle. If, then, this tubercle is absent in the Naulette jawbone, it is because the man of Neanderthal, the "Chellean man," was incapable of articulate speech [1].'

Geiger's answer.

Philosophers, too, have arrived at the same conclusion. Lazar Geiger, for instance, to whom the philosophy of language owes so much, expresses his conviction 'that although, as far as our observation reaches, man is always rational, yet he cannot always have been so.' 'Reason,' he says, 'does not date from all eternity, but, like everything else on earth, it had an origin, a beginning in time. Like the species of living beings, reason did not spring into existence suddenly, finished and in all its perfection, as it were by a kind of catastrophe, but it has had its own development. We have in language an inestimable and indispensable instrument for seeing this, nay, I believe that whatever plausible

[1] See Horatio Hale, On the Origin of Languages, p. 31.

theories on the descent of man may have been started elsewhere, certainty and assurance can be obtained from language only.'

It seems impossible to break through this argument, nor do I wish to refute it, though I shall try to show that it requires an important modification. To take reason as something given, ready at hand whenever we want to apply it to the brute material supplied by the senses, this view, still held by Kant and by most of what may be called the classics among philosophers, is no longer possible in an age which has learnt to look upon the very Alps as the slow accumulation of infinitesimal atoms, and upon the most highly organised animals as the descendants of a Moneres.

Difference between rationalis and rationabilis.

We must be careful, however, not to be carried away by the philosophical fashion of the day. When Geiger says that man was not always rational, he really means rationalis, but not rationabilis, and between these two the difference is immense[1]. The non-rational cannot become rational, as little as the non-sentient can become sentient. 'How is it

[1] Kant made the same distinction long ago, when in his Pragmatische Anthropologie, p. 652, he wrote: 'Man was not always an animal rationale, but only an animal rationabile; he became rational through his own exertion, and chiefly through the two organs of his fashioning hand and his social language.' Nay, Kant went even further, for he thinks it possible that 'under the influence of great evolutions of nature a new epoch may still follow in which the Orang-Outang and the Chimpanzee might develop their organs of walking, grasping, and speaking into the structure of man, and might develop an organ for the use of the understanding which should gradually become more perfect through social culture.' I do not understand such possibilities, and they hardly seem to lie within the sphere of practical philosophy.

possible,' Noiré writes, 'that from unconscious and non-sentient matter consciousness and sensation should shine forth, unless the inner quality, though in a dark and to us hardly perceptible manner, belonged before to those substances from which the first animal life, in its most elementary form, was developed[1]?'

The true meaning of qualitates occultae.

We are not concerned at present with the question of a possible transition from unconscious and non-sentient to conscious and sentient matter (we saw that a Monon, in order to exist at all, must be self-conscious), but only with the development of a sentient into a rational being, or, as others would express it, from an animal into man.

And here it may possibly be objected that the inner quality, of which Noiré speaks, is only a new name for those qualitates occultae which are the terror of modern philosophy. But because modern philosophy has shown that such terms as occult qualities, innate ideas, faculties and instincts have been subjected to much abuse, it does not follow that these terms, musty with the crust of long-accumulated misconceptions, should be thrown away altogether, like broken toys. Every one of these terms, if only carefully defined, has a legitimate meaning, and if people would but try to see through the veil of language, they would find that at no time have the thoughts conveyed by these terms exercised a more powerful sway than at present, when evolution and potential energy are the watch-words of the ruling philosophy.

It would really take away one of the most important instruments of thought, if we were not

[1] Der Ursprung der Sprache, p. 193.

allowed to distinguish between what is possible and what is not, or as in our case, between what is not yet rational, and what never can be rational. The whole theory of development or evolution rests, or ought to rest on this distinction, for evolution means neither more nor less than the turning of occult into manifest qualities, of changing the possible into the real; but also, I should add, in distinguishing rigorously between the possible and the impossible. If we admit that man may at one time have been a mute animal, it does not follow that every mute animal may in time become man; it does not follow that language, in which we mean to study the development of mind, presupposes nothing but what we find at present in every ape.

Darwin's theory of Evolution, and why I differ from it.

This point seems to me of so much importance in the present state of philosophic thought, that I feel it incumbent on me to explain, as clearly and fully as possible, why, though everything I have written has been in support of the theory of evolution, I have had to protest again and again against Darwin's interpretation of that theory. How a student of the Science of Language can be anything but an evolutionist, is to me utterly unintelligible. He has to deal with nothing but evolution from beginning to end. Latin becomes French before his very eyes, Saxon becomes English, Sanskrit Bengâli. The Aryan languages as well as the Semitic point back each to their own types, which we see diversified in endless dialects and languages. It is the same wherever we approach the study of any single language. We always find it changing or changed, and related to other languages, that is to say, like

them evolved from a common type. Long before Darwin made the theory of evolution so widely popular, that idea had completely dominated the Science of Language, and nowhere could Darwin and his friends have found a stronger support for their theory than in the works of comparative philologists.

To speak of Darwin as the discoverer of evolution, has always seemed to me an insult to every student of philosophy, and I am glad to see that so honest an admirer and follower of Darwin's as Professor Huxley should have entered his indignant protest against this popular delusion. In answer to Mr. Gladstone, who thought it necessary to lay great stress on the fact that Evolution in its highest form has not been a thing heretofore unknown to history, to philosophy, or to theology, Professor Huxley writes[1]:—

'Has any one ever disputed the contention thus solemnly enunciated that the doctrine of evolution was not invented the day before yesterday? Has any one ever dreamed of claiming it as a modern innovation? Is there any one so ignorant of the history of philosophy as to be unaware that it is one of the forms in which speculation embodied itself long before the time either of the Bishop of Hippo or of the Apostle of the Gentiles? Is Mr. Gladstone, of all people in the world, disposed to ignore the founders of Greek philosophy, to say nothing of Indian sages to whom evolution was a familiar notion ages before Paul of Tarsus was born!'

[1] Nineteenth Century, Dec. 1885, p. 854.

I rejoice to hear this protest from Professor Huxley, but I think I could easily produce from the writings, not only of the busy makers of public opinion, but of philosophers by profession, passages in which Darwin is spoken of as the discoverer of evolution, very much as Newton is represented as a discoverer of the Law of Gravitation, and in which Greek philosophy, in fact all philosophy before the middle of the nineteenth century, is treated with ill-disguised contempt.

Mill on Darwin.

No one seems to me to have judged Darwin's hypothesis more fairly than Mill in his Logic. He neither indulges in exaggerated praise, nor does he fail to see the real merit of that careful observer and bold generaliser. 'Mr. Darwin's remarkable speculation on the Origin of Species is another unimpeachable example,' he says, 'of a legitimate hypothesis. What he terms "natural selection," is not only a vera causa, but one proved to be capable of producing effects of the same kind with those which the hypothesis ascribes to it: the question of possibility is entirely one of degree. It is unreasonable to accuse Mr. Darwin (as has been done) of violating the rules of Induction. The rules of Induction are concerned with the conditions of Proof. Mr. Darwin has never pretended that his doctrine was proved. He was not bound by the rules of Induction, but by those of Hypothesis. And these last have seldom been more completely fulfilled. He has opened a path of inquiry full of promise, the results of which no one can foresee. And is it not a wonderful feat of scientific knowledge and ingenuity to have rendered so bold a suggestion, which the first impulse of every one was to reject

at once, admissible and discussable even as a conjecture[1]?'

I shared from the very first in the delight with which the long-neglected theory of evolution was welcomed again by English students in almost every branch of science, but I felt bound also from the very first to enter my decided protest against those who would not see that in the general process of evolution, whether in nature or in mind, not all things, but certain things only, are possible. If evolution undertakes to teach that everything can become everything, it would take away with one hand what it has given us with the other, nay, it would destroy the scientific character of all our researches, whether in the realm of nature or in the realm of mind. I felt this so strongly that even at the risk of being misunderstood, I thought it right openly to express my dissent, and I still hold so firmly to the view which I expressed in my Lectures on Mr. Darwin's Philosophy of Language, delivered at the Royal Institution in 1873, that I give here once more the substance of my arguments, only leaving out what seems now of less importance, or what is no longer contested by those who formerly differed from me.

Two kinds of Evolution.

As I said just now, I was brought up from my earliest youth in an intellectual atmosphere permeated by the ideas of development and historical growth, nay, I never doubted the theory of evolution such as I learnt it from the works of Kant, Herder, and Goethe. Nowhere again did I see that theory more clearly

[1] Logic, iii. 14. 6.

confirmed than in my own special studies, in the Science of Language. But I also came to see, at a very early time, the dangers of that theory, as it was propounded in Germany in the beginning of this century by men such as Oken, Schelling and others, and I have always considered it a mere abuse of it, if its apostles went back to the Heraklitean doctrine of πάντα ῥεῖ (all things are in flux), and ignored or denied the existence of any Broad Lines, or fixed steps or stages, if I may say so, in the evolution of nature as well as of mind. If there were no such lines or limits, it seems to me that the theory of evolution, instead of explaining the origin of species, would necessarily lead to a denial of all species, nay, it would consign the very concept of species, as well as of genus, to the limbo of mythology. This has been well expressed by Lotze. 'We cannot but remember,' he writes, 'though happily as an error which we have outgrown, the wild caprice with which not long ago people would derive a word in one language from any casual word in another, and call it etymology; at the present day people need to be warned against proceeding in a similar way to satisfy the newly awakened desire to conceive all the various kinds of organic beings as evolved from one other, all fixed specific differences being done away [1].'

The theory of evolution to which I hold, and which seems to me confirmed more and more by every discovery that has lately been made in the growth of nature and in the growth of the human mind as represented in language is this, that evolu-

[1] Logic, English Transl. p. 186.

tion in both starts from distinct beginnings, and leads to distinct ends. Ex aliquo fit aliquid.

I therefore deny in the growth of language what Mr. Darwin himself, differing thereby from most Darwinians, denies in the growth of nature, namely one uniform beginning for all and everything—in other words, one primordial cell for all organic beings, one primordial root for all words.

From this admission of different beginnings it follows that each living cell can only become what, according to different philosophical points of view, it was fit or meant or willing to become, and that after it has fulfilled this purpose, it remains fixed and does not go beyond. This explains what I call the Broad Lines in nature, which alone enable us to know and understand nature, and to recognise in her a well-ordered kosmos, and not a mere mass of changes and chances. It also follows from this that no living being and no class of living beings should be derived from any other, if they possess a single property which their supposed ancestor does not possess, either actually or potentially.

So far I agree with Darwin in principle. I differ from him, however, when we come to the question of the descent of man from some unknown animal ancestor, because I look upon language as a property of man of which no trace, whether actual or potential, has ever been found in any other animal. I therefore contend, that Darwinians, if true to the principles enunciated by Darwin himself, ought to accept the conclusion that man cannot be descended from any other animal, provided always that I can establish my premise that language is really a proprium of man and of man only.

When we speak of genera, species, and individuals, let us remember what is really given us, and what is our own workmanship in these names. Individuals, Species, Genera.

What is given us are individuals; genus and species are both of our own making, they are our concepts.

And here it is important to observe that the meaning of these technical terms was originally far more just and natural than what it has become since in the hands of later philosophers. We now call 'a class which is divided into two or smaller ones, the genus, and the smaller ones into which it is divided, the species[1].' But the early thinkers who wanted and invented these terms meant by genus or kind a class of individuals held together by community of origin or birth, by species a class of individuals held together by similarity of form only (εἶδος). With that primitive nomenclature it might well happen that the species was larger than the genus, for a species, such as for instance a herd of cattle, consisting of oxen, sheep, and goats, might comprise several true genera, namely oxen, sheep, and goats. I mention this in order to show that classification both by genus and by species is our work and founded on our observation; in the case of genus, on the observation of a common birth, in the case of species, on the observation of a common form. The most modest form in which the whole question of the origin of species can be expressed is that adopted by Mill[2], 'By the naturalist, organised beings are not usually said to be of different species, if it is supposed that they have descended from the same stock.'

[1] Mill, Logic, i. 7; Jevons, Logic, par. 37. [2] Logic, i. 7. 4.

Knowledge impossible without Individuals and Genera.

Something, no doubt, must be given us, something by which we can observe and afterwards arrange, and it may well be argued that, unless there were both uniformity and variety to be observed in nature, the whole nature of our mind too would be different. If there were, for instance, no diversity in the objects of experience, and they were all like so many coins or counters, one undistinguishable from the other, we might possibly count, but what we now call thought would be impossible. We should be mere mathematicians. If, on the contrary, there were nothing but diversity in the objects of experience, and they were all so many monsters, sharing no single property in common, again we might possibly stare and wonder, but real thought would be impossible.

The term Species to be discarded.

Our very thought therefore is based on what the ancients called kind and form, i. e. community of origin and similarity of form, or on what we now call genealogical and morphological classification. I cannot help thinking, that much confusion of thought would be avoided if in all discussions on nature or on mind the term species were for the future altogether discarded. We have genus or kind, which has a definite meaning, namely a class of beings which have a common ancestor and produce offspring like themselves. Varieties observed in each genus should be called varieties, instead of species, while large classes of genera, such as aquatic, terrestrial, and aerial animals, might be called kingdoms or realms of nature, a name which would say nothing about their possible common origin, but only predicate their being included within the same limits or frontiers. Even for

logical purposes I believe that sub-genus would be far better than species.

Let us now see what we mean by an individual, for it is here that the whole secret of evolution lies. Each individual, if it belongs to a natural genus, shares its birth and all that follows from it in common with other individuals of the same genus. But in order to be an individual, it must also, however minutely, differ from all other members of the same genus. No sheep is exactly like all other sheep, no leaf exactly like all other leaves. The Individual.

Each individual, therefore, in order to be an individual, possesses by necessity certain generic and certain individual qualities, and in this necessity, or at all events in this reality, lies the true secret of what we call variation and, in the end, of evolution.

It follows from this, and this is a point of the greatest importance, that variation can never be carried so far as to amount to a total obliteration of generic by individual qualities. If this were to happen, the individual would cease to be the individual of his genus, it would become the individual of another genus, or a mere straggler.

This brings us back to the old doctrine that true genera must be tested by descent and propagation, and this was no doubt the view which the old framers of our words and thoughts took. All that was born of sheep was called sheep, all that was born of man was called man. There might be different varieties, such as black sheep and white sheep, or black men and white men; but as long as the black and white individuals could have offspring together, the black and white were True Genera.

conceived as 'sorts of the same kind.' To call them species has been the cause of endless confusion.

Reason versus Chance.

Here, however, we must again carefully distinguish between two theories which have divided the world from the earliest to the present time.

Some philosophers hold that in the beginning there was Chaos, or, as we should say, the possibility of everything, and that out of this, certain realities were evolved.

Others, speaking more or less mythologically, admit either a great primeval ancestor, begetting everything out of himself, or a personal creator who made everything out of given materials or out of nothing.

Those who admit a personal ancestor or creator, generally ascribe to him the work of dividing all that exists by those Broad Lines which keep individuals of one kind separate from individuals of another. Whatever there is of rhyme or reason in the world is naturally referred to that first source.

Those on the contrary who begin with a given Chaos ascribe its change into a well-ordered Kosmos to an inherent fitness, or to what of late has been called by a number of names, such as Natural Selection, Survival of the Fittest, etc. Empedokles already used a very similar expression when he remarked that what is fit will always preponderate, because it is in the nature of the fit to preserve itself, whereas the unfit has vanished long ago[1].

The fact is that everybody who has eyes to see, sees some kind of order, purpose, or reason in nature, and tries to account for it either mythologically or philosophically. The mythological explanation is

[1] Lange, Geschichte des Materialismus, vol. i. p. 23.

easy enough, a rational creator produced a rational world. The philosophical explanation declines a creator, but finds it in consequence extremely difficult to frame any expression for what has caused order and purpose in nature. The foundation of all order in nature consists in what we call genera, and sub-genera (often called species), and the first question which philosophers have tried to answer has always been, whence the origin of species, whence those Broad Lines of demarcation which keep individuals of one genus or species separate from those of another, if only by their inability to maintain themselves or to produce offspring except within the barriers of their own kind? Even if we imagined that in earlier periods different genera were not so completely separated as they are now, and that even fishes, reptiles, mammals, and birds, which can no longer beget offspring with one another, may nevertheless have descended from common parents, and in the end from one common seed, the question would still remain the same, How did these genera branch off from one common stem, and how did they afterwards maintain themselves for ever as separate from each other? We can imagine with some effort a tree one branch of which should bear plums, another apples, another pears. But the fact would remain nevertheless that, as soon as they are ripe, plums would produce plum-seed, and plum-seed would grow into plum-trees; apples would produce apple-seed, and apple-seed would grow into apple-trees; pears would produce pear-seed, and pear-seed would grow into pear-trees.

How is this to be explained?

Darwin, like Empedokles, imagined that the 'Sur-

vival of the Fittest,' 'Natural Selection,' 'Influence of Environment,' and some other such names or powers would explain all that has to be explained; but if we examine every one of these terms more closely, we shall find indeed that they explain a great deal, but at the same time that they presuppose a great deal. We are not to speak of a rational creator, nor even of some primordial Nous or reason or will. But what does 'Natural Selection' mean? If we divest it of its metaphorical disguise, we find that Selection presupposes distinction and judgment, and therefore, unless all is chance, Natural Selection presupposes some kind of reason. 'Survival of the Fittest' again is sheer tautology, and simply returns us our question in the shape of an answer. We ask, Who is fit to survive? and we are answered, He who is very fit or the fittest. Lastly, if we ask whether that fitness comes from within or from without, we are referred to the 'Influence of Environment,' as if nature was not a whole, and the surroundings or circumstances in which each individual moves as much a part of nature and nature's plan as each individual, each genus, and each species.

Nature impossible without Genera.

I prefer to look upon those Broad Lines which distinguish genus from genus or kind from kind as part and parcel of the whole plan of nature. I am quite aware of the immense advantages which the theory of a rational creator or even of a great primeval ancestor, some kind of Hiranyagarbha, possesses over all other theories, nor am I frightened by the many anthropomorphic disguises which it is apt to assume. But I consider it wisest to refrain from expressing any opinion on the problem of the begin-

ning of all things. In this respect I follow the early Buddhists, who forbad all speculations on that point as irreverent, if not irrational. However, whatever opinion different people may feel inclined to adopt, one fact is certain that, as soon as we know anything of nature, we find that genera and sub-genera exist, that nature and genera are in fact inseparable. Whatever variability and pliancy we may ascribe to creatures belonging to the unknown ages of our globe, as soon as we know anything of that globe, and its inhabitants, we find them divided into plants and animals, and both again into a number of classes and varieties. Variation, which is but another name for what constitutes the essence of every individual, may account for varieties, but that process cannot be carried on ad infinitum, but only ad finitum, that is to say, varieties cannot transcend the limits of the genus without ceasing to be what they are, or what they are meant to be, without losing, so to say, their raison d'être.

I know it is this 'meant to be' which rouses at once the ire and suspicion of certain philosophers. As soon as they hear such words as 'meant to be,' or 'premeditated,' they smell the First Chapter of Genesis, they are frightened by the sight of the great Architect who made the world as a man makes a machine.

Mythological Language inevitable.

Is it really necessary to say again and again what the Buddhists have said so often and well, that the art of creation is perfectly inconceivable to any human understanding, and that if we speak of it at all, we can only do so anthropomorphically or mythologically? But because we know this, and because we surrender that mythological language to those who were or who are

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incapable of any other, does it follow that we must surrender at the same time all that was meant by it? The theory of a personal creator was meant to exclude the idea of mere chance, and it is the same idea which I wish to exclude when I speak of the Broad Lines of nature as meant or premeditated. There is no part of nature without these lines, nay, without them nature would cease to be nature: it would be chaos. Minerals, from the oldest to the newest, crystallise, but once crystallised, they cease to develop. Elements do not combine indifferently. If they did, there would be no fixed kinds of bodies. Salts and stones and ores would approach to and graduate into each other by insensible degrees, and all would be confusion and indefiniteness[1]. The colours of the rainbow, however close to each other, can be distinguished; the notes of the musical scale do not produce harmony unless they are kept distinct by the number of their vibrations. Water boils and freezes under well-defined conditions. There is order and beauty in the firmament, in the movements of the stars, in the revolutions of the earth, in the returns of the seasons, in the succession of day and night. All this together inspires me with a trust or faith—I shall not call it more—that all around us has been ordered, or is meant and premeditated. And if with this faith, the best faith in the world, we look upon all living things, whether plants or animals, we cannot bring ourselves to believe that all is here casual and chaotic, that a plant was not meant to be a plant, but may transgress its limits and become an animal; that

[1] See Whewell, as quoted by Mill, Logic, ii. 5. 6.

fishes, reptiles, mammals, and birds are mere lusus naturae, that may come and go; and that though at present plants and animals cannot produce offspring together, it is quite conceivable that they may have done so in prehistoric times and may do so again.

The Broad Lines of Nature.

It may be said that these Broad Lines of which I have been speaking are purely subjective, that we, not nature, distinguish yellow from green, that we, not nature, distinguish high from low notes. This is true in one sense, namely in so far as the whole of nature exists for us only as it is conceived by us. But, on the other hand, we can only conceive what is conceivable and can distinguish only what is distinguishable, and when we apply to our conception of genera that old test of a descent from common parents, it must become clear that this generic concept of things is not entirely subjective, though, like all our knowledge, it rests on subjective perception and observation.

The Smaller Lines of Nature.

I follow Darwin with all my heart when he shows how many varieties have without any necessity been raised to the rank of species or genera; I admire his great sagacity in observing the influence which artificial selection, and likewise what he calls natural selection, can exercise in producing variation and making it more or less permanent. Even if he, or rather some of his followers, should maintain that the actual genera which we see in nature, from the days before or immediately after the creation, have all proceeded from one primordial Moneres, I can conceive such a theory, provided that we admit a power of differentiation in that primordial germ itself. But I confess I admire most what has

been called Darwin's inconsistency, but what seems to me more than anything else to prove his scientific conscientiousness, his admitting, not one, but a number of progenitors for the great genera of nature.

How Darwin differs from the Darwinian.

Now that Darwin is no longer among us, it becomes all the more incumbent on us to distinguish carefully between what he really taught, and what has been taught under his name by some of his followers.

First of all, then, Darwin remained to the end an upholder of the principle of Polygony, as opposed to Monogony. According to him there was not in the beginning one primeval cell which in time developed into every living thing, but 'four or five progenitors for the animal, and an equal or lesser number for the vegetable kingdom[1].' 'Analogy,' he continues, 'would lead us one step further, namely, to a belief that all animals and plants are descended from some one prototype. But analogy may be a deceitful guide.' 'Nevertheless, all living things have much in common, in their chemical composition, their germinal vesicles, their cellular structure, and their laws of growth and reproduction. We see this even in so trifling a circumstance as that the same poison often similarly affects plants and animals, or that the poison secreted by the gad-fly produces monstrous growths on the wild rose and the oak-tree. Therefore I should infer from analogy that

[1] Origin of Species, first edition, p. 484. Agassiz maintained that in the animal kingdom the possibilities of economical construction are exhausted in the four grand divisions—the Radiate, the Moluscan, the Articulate, and the Vertebrate. See Methods of Study in Natural History, p. 36.

probably all the organic beings which have ever lived on this earth have descended from some one primordial form, into which life was first breathed.'

This is all very carefully worded, yet Darwin was not satisfied, and in later editions he has considerably modified this very paragraph. The later omission (sixth edition, p. 423) of the words 'into which life was first breathed' has been much remarked upon, as indicating on Darwin's part a surrender of a belief in some extra-natural powers. But if Darwin had really meant to surrender that belief, he would never have written the following words[1]: 'I see no good reason why the views given in this volume should shock the religious feelings of any one. . . . A celebrated author and divine has written to me that he has gradually learnt to see that it is just as noble a conception of the Deity to believe that He created a few original forms capable of self-development into other and needful forms, as to believe that He organised a fresh act of creation to supply the voids caused by the action of His laws.'

On this point I should feel inclined to go much further than Darwin. It seems to me that the question is not whether one conception of the Deity is more noble than another (how can even a celebrated author and divine decide that?), but simply whether in our conception of creation or development we are forced to admit any extra-natural influence or not. And if I interpret Darwin's words rightly, he seems to me one of those who admit, nay, who postulate the existence of some such extra-natural cause, however much he may shrink from

[1] Origin of Species, sixth edition, p. 421.

asserting anything regarding the mode of operation. Darwin's books require to be read carefully, and from edition to edition. Let us look at the last words of his great work on the 'Origin of Species,' which no one would suppose to have been written at random. 'There is a grandeur,' he writes, 'in this view of life with its several powers, having been originally breathed [by the Creator] into a few forms or into one; and that, whilst this planet has gone cycling on according to the fixed law of gravity, from so simple a beginning endless forms most beautiful and most wonderful have been, and are being evolved.'

In this passage the words 'by the Creator' were absent in the first edition, and were added in the later editions. Surely they were added with a purpose. And what could have been this purpose except to define his position as one of those who, however far their researches and speculations may lead them, feel and recognise that there is always a Beyond, whatever name we call it, a something that, even if we call it by no name, is yet for ever present and irresistible.

Why do so many who express the highest admiration for Darwin, ignore this and similar passages? How, for instance, can Haeckel call himself a Darwinian and yet maintain, as he does, that in the present state of physiological language, the idea of a Creator, a Maker, a Life-giver has become entirely unscientific; that the admission of one primordial form is sufficient, and that the first primordial form was a Moneres, produced by self-generation?

It is not my object here to pronounce any opinion on the philosophical value of these different views of the Universe. I am not frightened by Haeckel's

views, for the same views have been defended from the very beginning of philosophic thought by arguments perhaps more powerful than any adduced by recent philosophers. I am quite willing to admit that the idea of a creator, even in its least mythological form, causes far more difficulties than it removes. But what I care for is historical accuracy, and I cannot bear the misleading statements according to which two systems of thought, so diametrically opposed on the most momentous question as Darwin's and Haeckel's, are allowed to pass under the name of Darwinism[1]. If Darwin, later in life, said, 'I think that generally (and more and more as I grow older), but not always, an agnostic would be the most correct description of my state of mind,' who, as he grows older and older, would not heartily join in these words? Surely the more we learn what knowledge really means, the more we feel that agnosticism, in the true sense of the word, is the only possible, the only reverent, and I may add, the only Christian position, which the human mind can occupy before the Unknown and the Unknowable.

Transition from inorganic to organic.

And here I may add at once that the theory of the development of all living organic beings from inorganic matter is likewise Darwinian rather than Darwin's. No doubt a discovery which would enable us to understand the origin of life, the change of inorganic into organic matter, would form the strongest foundation of the theory of development, and no one would have welcomed it more readily than Darwin, if he could have conceived it as possible

[1] See, however, P. F. Underwood, in the 'Index,' Aug. 12, 1886.

in the present state of our knowledge. But while Darwin abstained, those who call themselves Darwinian have shown what they themselves seem to consider far greater scientific courage. When Dr. Martineau ventured to point out the existence of a chasm between the living and not-living as a fatal difficulty in the way of the general doctrine of evolution, he was severely taken to task by Mr. Herbert Spencer. Now I admit that the word 'fatal' might have been omitted, at least if it was meant to convey the meaning of irremovable. Whether that difficulty is irremovable or not, none of us knows. But Mr. Herbert Spencer would not be satisfied with this. 'Here again,' he exclaims, 'our ignorance is employed to play the part of knowledge. The fact that we do not know distinctly how an alleged transition has taken place, is transformed into the fact that no transition has taken place.' Can this be called argument? Why allege a transition? It is not in alleging such a transition that we raise our ignorance to the rank of knowledge? And if we do not know distinctly how even such a merely alleged transition has taken place, to say that it is possible means really nothing, unless we mean by possible no more than what is vaguely conceivable.

But what follows in Mr. H. Spencer's reply to Dr. Martineau is even worse. 'Merely noting this,' he continues, 'I go on to remark that scientific discovery is day by day narrowing the chasm (between the non-living and the living). Not many years since it was held as certain that chemical compounds distinguished as organic could not be formed artificially. Chemists have discovered the art of building them up from the simpler to the more complex, and do not doubt that

they will eventually produce the more complex. Moreover, the phenomena attending isomeric change give a clue to those movements which are the only indications we have of life in its lowest forms. In various colloidal substances, including the albumenoid, isomeric change is accompanied by contraction or expansion, and consequent motion; and in such primordial types as the Protogenes of Haeckel, which do not differ in appearance from minute portions of albumen, the observed motions are comprehensible as accompanying isomeric changes, caused by variations in surrounding physical actions. The probability of this interpretation will be seen on remembering the evidence we have, that in the higher organisms the functions are essentially effected by isomeric changes from one to another of the multitudinous forms which protein assumes.'

This is no doubt very able pleading on the part of an advocate, but I cannot help adding, it seems to me the very pleading most detrimental to the discovery of truth. How can it be said that the chasm between inorganic and organic bodies is narrowed because certain substances have lately been built up in the laboratory which are not organic substances themselves, but simply secretions of organic bodies? The question was not, whether we can imitate some of the productions turned out of the laboratory of a living body, but whether we can build up such a living organic body out of dead and inorganic matter. But I should be satisfied with much less. If I give Mr. Spencer carbonic acid and water, will he make starch out of them? Again, unless Mr. Spencer is prepared to maintain that life is nothing but isomeric change, the mere fact that there is an apparent simi-

larity between the movements of the lowest of living bodies and the expansion and contraction produced in not-living substances by isomeric change, carries very little weight indeed. Even though the movements of the once famous Protogenes Haeckelii were in appearance the same as those produced in chemical substances by isomeric change, no one knows better than Mr. Spencer that life is not merely movement, but that it involves assimilation, oxidation, and reproduction, if only reproduction by fission. Every chemist will tell him that no one has yet succeeded in producing albumen, much less a moneres, and till that is done Dr. Martineau has surely as much right to protest against the hypothetical admission of a transition from no life into life as Mr. Spencer would have to protest against the assertion that such a transition is altogether inconceivable. Life may hereafter be discovered to be the result of a chemical combination[1] of given substances, a peculiar mode of force, dependent on ascertainable conditions, and analogous to heat and electricity. Why not? But for the present it seems to me a violation of the fundamental laws of scientific reasoning to use such an hypothesis as a real explanation of the problem of life. That problem is as dark to us as it was to Vasishtha, Zoroaster, or Moses, and I do not see that Mr. Spencer has thrown any new light on it. Darwin kept clear from all these vain imaginings, from the Urschleim, from self-generation, from the one primordial cell and all the rest, and expressed his conviction that in the present state of our knowledge we cannot bridge over certain chasms

[1] Strauss, Alter und Neuer Glaube. p. 171.

which divide not only the inorganic from the organic world, but even certain great divisions in the organic world from each other. Darwin himself deals no doubt often in hypothesis, but never, or very seldom, in mere surmises; and nothing, I believe, has done so much harm to the steady progress of the work which Darwin began so well as the vague guesses by which some who call themselves his disciples have tried to improve their master's work.

Let us remember then that Darwin admitted different beginnings. That is the important point: the number of ancestors, whether large or small, is a matter of much lesser importance. These different beginnings he did not attempt to explain, nay he was willing to adopt a language which would be most widely intelligible, by saying that 'life was breathed into these few forms by the Creator.' What he meant was that the question of the origin of all things, and of living germs in particular, transcends the powers of human reason. Something must be granted us, or be taken for granted. Darwin requires the ancestors of the great genera of organic beings. These ancestors, more or less in number, being granted, everything else becomes intelligible. Individuals, in order to be individuals, must vary, and that variation may lead in time to what we call varieties, what the ancients would have called more correctly εἴδη or species. But whatever name we call these bundles, they are bundles of our own making. The origin of species is in the mind of man.

Different Beginnings.

These varieties, however, could never transcend the broad lines of the genus to which they belong. They may approach another genus very

closely, they may sometimes even overlap on some points the limits of their own genus, as in the case of plants approaching the type of animals. But these are rare and partial exceptions which do not affect the fundamental principle. They are recognised irregularities which do not interfere with the regularity of the whole plan of nature. It is rather a gratuitous assumption that the barriers which separate genera and sub-genera must be impassable, in the sense that there should be no attempts made in nature to pass them. On the contrary, if there is a continuous growth, only interrupted for certain purposes from time to time or from stage to stage, we should be prepared for more or less abortive attempts to pass these barriers, and ought not to be surprised to meet, so to say, with stragglers on either side. We see this very clearly in hybridism. While the old rule remains that different genera are sterile, or that sterility indicates difference of genus, we know that this sterility shows itself often in the second or third generation only. We know that there are plants which approach the animal kingdom, and that there are animals in several respects even superior to man. But all this does not do away with the systematic order of nature, on the contrary it seems to me rather to confirm it[1]. The waves beating against the shore do not prove that there is no shore-line.

Genus remains genus.

Whatever the origin of genera, or of the generators of genera may have been—and I hold this point to be beyond all human comprehension and am willing to bear with almost any religious or mythological phraseology—if once a genus has been rightly recog-

[1] See Whewell, History of the Inductive Sciences, ii. 120.

nised as such, it seems to me self-contradictory to admit that it could ever give rise to another genus. Something that is neither plant nor animal may possibly be conceived to develop into a plant or into an animal, but once a plant and it will only produce plants, once an animal and it will only produce animals. Nay, I go a step further, and say, Once a sheep always a sheep, once an ape always an ape, once a man always a man. I can conceive that before the beginning of all things, there was a being which was as yet neither ape nor man, and such a being may be supposed to have been developed into an ape and into a man. But what seems to me simply irrational, is to look for a fossil ape as the father of a fossil man, and here I think I differ, not only from Darwinians, but from Darwin himself.

The following passage which I copied from an article of Huxley's, though I cannot now find the reference to it, seems to me in full agreement with most of the views which I have tried to maintain for a long time. If I am wrong, he will correct me.

'The exact place and power of natural selection remains to be seen. Few can doubt that, if not the whole cause, it is a very important factor in that operation, and that it must play a great part in the sorting out of varieties into those which are transitory and those which are permanent. . . . But the causes and conditions of variation have yet to be thoroughly explored, and the importance of natural selection will not be impaired, even if further enquiries should prove that variability is definite, and is determined in certain directions rather than in others by conditions inherent in that which varies. It is quite conceivable that every species tends

to produce varieties of a limited number and kind, and that one effect of natural selection is to favour the development of some of them, while it opposes the development of others along their predetermined line of modification.'

Man and Beast kept separate by Language.

I have stated before that one genus may approach very near to another, just as one colour in the rainbow presses close on another colour, one tone on another tone, being kept distinct by a very small difference in the number of vibrations only, and that nevertheless that almost vanishing line between the two may be impassable. I do not for one moment venture to deny therefore that in the eyes of a physiologist a monkey may be so close to a man as to be hardly distinguishable; but I do not think that this necessitates or warrants the admission of man's equivocal descent from an ape. Before we could admit this, we must have complete evidence that whatever we find in man exists in the ape, either really or potentially. That man cannot have fertile offspring from any genus but his own, ought to have some weight, no doubt; but what in my opinion is of far greater weight, is indeed decisive, is the fact that man possesses something which no other genus possesses whether actually or potentially—namely language, which, as I tried to show, is only another name for reason. Even if it could be proved that man was originally a mere animal, it is clear that, though he began where the animal begins, he did not end where the animal ends; and after all it is the τέλος, it is what a being can become, not what it is at any given time, that constitutes its real character.

And why should we create for ourselves unneces-

sary difficulties? Why should we look upon all variety as successive, when it may be quite as well collateral? That there is a successive or serial development in nature, that such development is occasionally arrested, that intermediate links are lost, that animals differing now as much as the spaniel and the greyhound have sprung from common ancestors, all this has long been known. I have never doubted that the black, the brown, the yellow, and the white man were descended from common ancestors, though when I said so forty years ago I was seriously taken to task for holding what was then called so unscientific an opinion. Now all is changed, and what may be called popular scientific opinion is decidedly in favour of one primitive pair of human parents, nay, it hankers for one primordial ancestor for all animals, and in the end for all organic beings. I do not see what we gain by this. If we can conceive one cell developing into an amoeba and no further, we can conceive another cell also, never resting at the stage of amoeba, but always passing on to the next stage, and resting there. Another cell may never rest till it reaches the fourth stage, and so on till we come to cells which are not satisfied till they reach—to use the language of modern zoologists—the stages of Prosimia, half-ape, Menoceron, tailed ape, Anthropoid or gorilla, Pithecanthropus or ape-man, and lastly of Anthropos or man. Why then should it be the settled or ready-made Pithecanthropus who became the father of the first man, though everywhere else in nature what has once become settled remains settled, or if it varies, it varies within definite limits only? Nature surely has more than one arrow in her quiver, and

when one has reached its goal, it need not be picked up in order to hit a higher mark.

However, I am willing to go even a step further. Suppose that 'the missing link' had actually been found, and that all differences of form which divide man from ape were bridged over, would that help us to explain the origin of man? We should indeed have found a man-like ape, but we should still have an ape, incapable of language, that is, we should not have found the explanation of the origin of man. Only if we could produce a speaking ape, should we have fulfilled the conditions which our problem necessarily involves, and that has never been done, nay, for some reason or other, has never been attempted.

I am willing to make a still greater concession. It has often been said that there is less difference between the adult man and the ape than between the human embryo of one month and the eighteen-months old child; and the question has been asked why, considering that the mute embryo evolves the faculty of thinking and speaking, the whole race should not through long struggles have achieved the same result. The question does not seem to me quite rightly put. All depends on what we mean by difference. No one would ask why, as there is less difference between an apricot and a peach than between a peach-bud and a peach-fruit, a peach-bud should never become an apricot. The real difficulty has been disguised by using difference in two senses, and by slipping in afterwards the word faculty. The mute embryo evolves the faculty of thinking and speaking, because it is there; the ape does not, because it is not there.

Darwinians seem to imagine that by deriving man from a full-grown ape they show more courage than

those who object to this theory. Far from it. It requires far greater intellectual courage to derive man from some undeveloped and hardly distinguishable seed, as we do because we see it every day, than to take refuge behind an ape, who no doubt in appearance has gone a long way towards reaching the level of man, yet has never been seen to reach it. But why take the ape for granted, and why not trace both ape and man back to those small germs which are to us quite indistinguishable, and which nevertheless, before our eyes, develop every day, the one into an ape, the other into a man. If the germ of a man never develops into an ape, nor the germ of an ape into a man, why should the full-grown ape have developed into a man? The fact, or the miracle, that an almost invisible seed develops into a man, we must believe, because we see it: why should we not be satisfied with admitting the same fact, or the same miracle, in the beginning of all things? If one seed can grow into an ape and another into a man, why should the seed of the man have to be arrested at the station of the ape, before it can reach its final goal? I do not mean to say that it might not be so, but as we never see it, what difficulties do we escape by imagining it? I do not use this as an argument, I only wish to repel the charge of intellectual cowardice, so often brought against those who decline to follow Darwin in his one-sided interpretation of evolution.

It is impossible to put the case in too strong, in too extreme a form, if we want to find out its real meaning.

Suppose that every man during the early years of his life was really to all intents and purposes a monkey,—perhaps he is,—yet the fact that after that

time some of these monkeys developed language or reason, while others remained without language and reason through life, would in my opinion stamp the former as an independent genus. I cannot, I believe, make greater concessions, and yet at the same time establish my own position on firmer ground. Language may seem a very small matter on which to establish a generic difference between man and animal, and yet those who know what language really is and what it implies will understand how broad and how deep a line of demarcation it draws between those who speak and those who do not[1]. Darwin says that man was originally as low as many a domesticated animal, it may be lower, and though he has now become what he is, he must be classed as an animal. By all means. Man is an animal in most senses of the word, but not in all. Man may have been mute for ages, if you like. We have no interest in abridging the processes through which he passed before he spoke, before he became what he is now. But considering the facts as they stare us in the face, would it not be more reasonable to say that man was originally as low as many a domesticated animal, it may be lower, but as he was capable of becoming what he is, he cannot be classed as an animal with all other animals?

The unhistorical character of Evolutionist Philosophy.

And here is the really important point where I cannot help finding fault, again not so much with Darwin, as with some of his followers. Darwin himself was not a student of philosophy, in the usual sense

[1] T. H. Green, Works, vol. ii. p. 212. From the apparent absence of language among animals we infer that they have no need of it, because they do not convert mere feeling into a felt thing.

of the word, nor did he concern himself much about the question how the theory of evolution, if once firmly established, might affect the problems which had been discussed by Plato and Aristotle, by Berkeley, Hume, and Kant. But those who have used Darwin's theory in support of their own philosophical views, and who have argued, not without some show of reason, that as man is the descendant of an animal, all that we call the human mind must be the outcome of the association of sensuous impressions, they at least ought to have remembered that in the history of philosophy this question has been argued once or twice before, and that the rulings of such judges as Locke and Hume, Berkeley and Kant, to mention the most recent only, may indeed be amended, but cannot be ignored.

Our own special inquiries too would lose all purpose, for we should start from wrong premisses. We thought we had established the fact that language and thought are two sides of the same thing, are inseparable, and in one sense identical. We therefore felt justified in trying to study the development of thought in the development of language, and we naturally looked upon the beginning of rational thought as contemporaneous with the beginning of language, i. e. with roots. But we are now told that language has nothing to do with thought, because animals, though mute, perform all the mental operations which we perform; and we are told further that penser c'est sentir, or, in stronger language, that thought is nothing but the decay of sensuous perception. It may be so, but if it is, it is not enough to state that it is so, but it is incumbent on those who hold this opinion to answer those who

have proved that it is not so. The historical progress of philosophy may be arrested, the stream of thought running on from Descartes to Kant may be turned back, but to ignore it is impossible, even for so great a man as Darwin undoubtedly was.

If Darwin were right, if man were really either the lineal or lateral descendant of some lower animal, the question discussed between Locke and Hume on one side and Berkeley and Kant on the other would indeed seem to be decided once for all. It is agreed that animals receive their knowledge through the senses only, and if man was developed from a lower animal, Kant and all who follow him would simply be out of court.

But have the followers of Darwin no misgivings that possibly Kant's conclusions may be so strong as to resist even the hypothesis of evolution, and that at all events they might be met by the retort that, if Kant's analysis of human mind is right, Darwin and those who follow him would simply be out of court? If no attempt had ever been made at answering the arguments of the sensualistic school, there would be no harm in speaking once more of the mind of man as well as of the mind of animals as a tabula rasa, on which impressions are made which afterwards fade away, and thus develop spontaneously into concepts and general ideas. But when one remembers the splendid feats of arms in the truly historical battles of the world, that is, in the battles for truth, then to be simply told that all this is passé, that we now possess evidence which neither Descartes, nor Spinoza, nor Locke, nor Berkeley, nor Hume, nor Kant possessed, and which renders all their lucubrations superfluous; that man being

the descendant of some lower animal, the development of the human mind out of the mind of lower animals is a mere question of time, there seems to be some excuse for a little impatience.

It is not for one moment maintained that, because Kant has proved that sensuous impressions do not suffice to explain all the workings of the human mind, the question of the possibility of a development of all human thought out of mere impressions is never to be mooted again. Far from it. Only, if it is to be mooted again, it should be done with a full appreciation of the labours of those who have come before us, it should be done in an historical spirit, otherwise philosophy will become a mere debating club, and lose all historical continuity which it has hitherto preserved from Thales to Kant.

Excuses for ignoring Kant.

Of course, we were told that it is not to be the old battle over again, between arguments on the one side and arguments on the other, but that the fight is now to be carried on with modern and irresistible weapons. The new philosophy priding itself, as, I believe, all philosophies have done, on its positive character, professes to despise the endless argumentations of the schools, and to appeal for evidence to matter of fact only. Our mind, whether consisting of material impressions or intellectual concepts, is now to be submitted to the dissecting knife and the microscope. We are shown the nervous tubes, afferent and efferent, through which the shocks from without pass on to the sensitive and motive cells; the commissural tubes holding these cells together are laid bare before us, the exact place in the brain is pointed out where the messages from without are delivered,

and it seemed as if nothing were wanting but a more powerful lens to enable us to see with our own eyes how, in the workshop of the brain, as in a photographic apparatus, the pictures of the senses and the ideas of the intellect were being turned out in endless variety.

And this was not all. The old stories about the reasoning of animals, so powerfully handled in the school of Hume, were brought out again. Innumerable anecdotes that had been told from the time of Aelian to the days of Reimarus were told once more, in order to show that the intellect of animals did not only match, but that in many cases it transcended the powers of the human intellect. As a fair specimen of what was written in Germany, a hundred years after Kant, I quote a passage from Professor Wundt's Lectures on the Soul of Men and Animals. 'All intellectual differences,' he says, 'are differences of degree only, not of kind[1].' Here one would be very glad to have first of all an explanation of what, according to evolutionist philosophers, is the difference between a difference of degree and a difference of kind. However, the lecturer goes on. 'If a butterfly,' he says, 'recognises a flower that is likely to yield honey, by its colour and smell, this is as much judgment based on syllogisms as if a scientific explorer discovers a general law from a series of facts given by experience. The only difference is that the syllogisms are here more accumulated and complicated, and therefore the results more comprehensive and perfect.' One might indeed have imagined oneself living again in the days

[1] Vorlesungen über Menschen- und Thierseele, 1864, vol. i. p. 458.

of La Mettrie[1], who, after publishing his work, L'homme Machine (1748), followed it up by another work, Les Animaux plus que machine (1750).

I confess I see few facts brought forward by evolutionist philosophers which were unknown to Kant and which he did not discuss in answering the arguments of Locke and Hume. It is this strong position which Kant took against Locke and Hume which ought to have been examined and, if possible, destroyed by Darwin and his school, before they proclaimed their belief in the descent of man from an ape, of human reason from the tricks of an ape, and of human language from the cries of an ape. There are those who speak of Kant's philosophy as cloudy German metaphysics, but I doubt whether philosophers who use such language have any idea of the real character and of the motive power of his philosophy. No one has dealt such heavy blows to what is meant by cloudy German metaphysics. No one has drawn so sharp a line between the knowable and the unknowable; no one, I believe, deserves at the present critical moment such careful study as Kant. I was glad indeed when I was told that my translation of Kant's Critique of Pure Reason was the best service I had ever rendered to England, but even now the number of real students of Kant's philosophy seems very small indeed. When I watch the philosophical controversies in England and Germany, I feel very strongly how much might be gained on both sides by a more frequent exchange of thought. Philosophy was far more international in the days of Leibniz and Newton, and again in the

[1] Œuvres Philosophiques, Berlin, 1751–96.

days of Hume and Kant, than it is now, when each country seems to go its own way. It is really painful to read the sweeping condemnation of so-called German metaphysics, and still more to see a man like Kant lectured like a schoolboy, and most frequently not from any difference on philosophical principles, but from sheer ignorance. One may differ from Kant, as one differs from Plato or Aristotle, from Berkeley and Hume, but those who know Kant's writings, and the position which he holds in the historical development of philosophic thought, are not likely to speak of him without respect.

The blame, however, does by no means attach to the English side only. There are many philosophers in German Universities who think that, since the days of Berkeley and Hume, England has ceased to be a great philosophic power, and who imagine they may safely ignore the work that has been achieved by the living representatives of British philosophy. I confess I almost shuddered when, in a work by an eminent German professor of Strassburg, I saw John Stuart Mill put down as an anti-diluvian philosopher, anti-diluvian, I suppose, in the sense of anti-Kantian. But this is not the language which any one would use who has really read Mill's works, and I am afraid that this philosophic Chauvinism is really beginning to be mischievous. If nationality must still narrow our sympathies in other spheres of thought, surely philosophy ought to stand on a loftier pinnacle.

The point we have now reached in our argument is this: We found that the constituent elements of thought were sensations, percepts, concepts, and names, and that these four, though distinguishable, were never

really separate from each other. We found, secondly, that the mere impressions of the senses would leave us simply in a confusion of sensation, and that the first real percept presupposed on our side receptive conditions, namely the forms of intuition, commonly called space and time, and the forms of our intellect, commonly called the categories. So far we followed Kant. Here, however, Kant left us, and it became our object to show what Kant had never shown, namely that, not only were percepts impossible without a conceptual interpretation, but that concepts likewise were impossible without names.

Here was the position where we made bold to withstand the onset of the advocates of promiscuous evolution. We had, first of all, to make it clear to ourselves what was really meant by genus, species, and individuals, and we arrived at the conclusion that individualisation was the true cause of variation, and, within proper limits, of evolution. We then returned to our former position. We had to admit that as we know nothing, except by analogy, of the mind of animals, we could not with the weapons that Kant has placed in our hands, make head against the assertion that they might possess, for all we know, the same forms of sensuous intuition and the same categories of the understanding which we possess. Nothing therefore could have been said, from the purely philosophical point of view, against treating man as a mere variety of some other genus of animals. But if concepts are impossible without names, our position becomes very different. We have then a right to say that the whole genus man possesses something, namely language, of which no trace can be found even in the most highly developed

animal, and that therefore a genealogical descent of man from animal is an impossible assumption. In order, however, to make it quite safe for us to advance so far beyond Kant, it will be necessary to define, as shortly as possible, the position which he took and maintained in the philosophical warfare of the last century. This will be the object of our next chapter. After we have clearly seen why percepts, as Kant has shown, are impossible without concepts, we shall be better able to understand why concepts, and in fact all conceptual thought, is impossible without names, and why the first word may be called the first step in the intellectual evolution of the human race.

CHAPTER III.

ON KANT'S PHILOSOPHY.

THE circumstances under which Kant wrote his Critique of Pure Reason show that his enormous success was due, not only to his own qualifications, great as they were, but to the fact that the tide of materialism was on the turn, that a reaction was slowly setting in in the minds of independent thinkers, and that he was but lending the most powerful expression to the silent convictions of the world's growing minority. Unless we keep this in view, the success of Kant's philosophy would be almost inexplicable. He was a professor in a small university town of Eastern Prussia, he had never been out of his native province, never but once out of his native town, Königsberg. He began to lecture at Königsberg as a Privat-docent, in 1756, just a year before the beginning of the Seven Years' War, where other questions rather, and not the possibility of synthetic judgments à priori, would seem to have interested the public mind of Germany. Kant worked on for sixteen years as an unpaid university lecturer. In 1766 he took a librarianship which yielded him about £10 a year, and it was not till he was forty-six years of age (1770) that he succeeded in obtaining a professorship of Logic and Metaphysics with a salary of about £60 a year. He lectured indefatigably

Causes of Kant's success.

on a great variety of subjects—on Mathematics, Physics, Logic, Metaphysics, Natural Law, Morals, Natural Religion, Physical Geography, and Anthropology. He enjoyed no doubt a high reputation in his own university, but not much more than many other professors in the numerous universities of Germany. His fame had certainly never spread beyond the academic order of his own country, when in the year 1781, at the age of fifty-seven, he published at Riga his Critik der reinen Vernunft, a work which in the onward stream of philosophic thought has stood, and will stand for ever, like the rocks of Niagara. There is nothing attractive in that book, nothing startling, far from it. It is badly written, in a heavy style, full of repetitions, all grey in grey, with hardly a single ray of light and sunshine from beginning to end. And yet that book soon became known all over Europe, at a time when literary intelligence travelled much more slowly than at present. Lectures were given in London on Kant's new system. Even at Paris the Philosopher of Königsberg became an authority, and for the first time in the history of human thought, the philosophical phraseology of the age became German.

Kant had spoken the word which the world was waiting for, and hence his sudden success. No philosopher has ever told, has ever taken and held his place in the history of philosophy whose speculations, however abstruse in appearance, however far removed at first sight from the interests of ordinary mortals, have not answered some deep yearning in the hearts of his fellow-men. What makes a philosopher great, or what makes him at all events really powerful, is what soldiers call his touch with the

main body of the great army advancing from truth to truth, his perfect understanding of the human solicitudes of his age, his true sympathy with the historical progress of human thought. At the time of Kant's great triumph the conclusions of Locke had remained unanswered for a long time, and seemed almost unanswerable. Berkeley's answer, though no one was able to refute it, seemed to convince no one. The world at large longed for a more intelligible reply. The problems which then disquieted not only philosophers, but all to whom truth was a matter of real concern, were not indeed new problems. They were the old problems of the world, the questions of the possibility of absolute certainty in the evidence of the senses, of reason, or of faith; the questions of the beginning and end of our existence, the question whether the Infinite is a shadow of a dream, or whether it is the substance of all we know. The same problems had exercised the sages of India, the thinkers of Greece, the students of Rome, the dreamers of Alexandria, the divines and scholars of the Middle Ages, the Realists and Nominalists, and again the followers of Locke and Hume, in their conflict with the followers of Descartes and Leibniz. But these old problems had in Kant's time, as in our own, assumed a new form and influence. If, in spite of its ever-varying aspects, we may characterise the world-wide struggle by one word, as a struggle for the primacy between matter and mind, we can clearly see that in the middle of the last, as again in the middle of our own century, the materialistic view had gained the upper hand over the idealistic. Descartes, Malebranche, Leibniz, and Wolf might influence the opinions of hard-working students and

independent thinkers, but their language was hardly understood by the busy world outside the lecture-rooms; while the writings of Locke, and still more those of Hume and his French followers, penetrated alike into boudoirs and club-rooms. Never, perhaps, in the whole history of philosophy did the pendulum of philosophic thought swing so violently as in the middle of the eighteenth century, from one extreme to the other, from Locke to Berkeley; never did pure spiritualism and pure materialism find such outspoken and uncompromising advocates as in the Bishop of Cloyne—who considered it the height of absurdity to imagine any object as existing without, or independent of, that which alone will produce an object, viz. the subject[1]—and the Librarian of the Advocates' Library at Edinburgh, who looked upon the conception of a subjective mind as a mere illusion, founded on nothing but on that succession of sensations to which we wrongly assign a sentient cause. But it is easy to see in the literature of the age, that of these two solutions of the riddle of mind and matter, that which explained the mind as the mere outcome of matter, as the result of the impressions made on the senses, was far more in harmony with the general taste of the age than that which looked upon matter as the mere outcome of the mind. The former was regarded by the world as clever, the latter almost as silly.

That all-powerful, though most treacherous ally of philosophy, Common Sense, was stoutly opposed to Berkeley's idealism, and that typical representative of Common Sense, Dr. Samuel Johnson, maintained

[1] Berkeley's Works, ed. Fraser, vol. iv. p. 376.

that he had only to strike his foot with characteristic force against a stone in order to convince the world that he had thoroughly refuted Berkeley and all idealists[1]. Voltaire, a less sincere believer in Common Sense, joked about ten thousand cannon balls and ten thousand dead men being only ten thousand ideas; while Dean Swift is accused of having committed the sorry joke of keeping Bishop Berkeley, on a rainy day, waiting before his door, giving orders not to open it, because, he said, if his philosophy is true, he can as easily enter with the door shut as with the door open. Though at present philosophers are inclined to do more justice to Berkeley, yet they seldom speak of him without a suppressed smile, totally forgetting that the majority of real thinkers, nay, I should almost venture to say, the majority of mankind agree with Berkeley in looking upon the phenomenal or so-called real world as a mere mirage, as mere Mâyâ, or illusion of the thinking Self. Mill forms an honourable exception. 'This short and easy confutation,' he writes[2], 'namely knocking a stick against the ground, overlooks the fact that, in denying matter, Berkeley did not deny anything to which our senses bear witness. . . . His scepticism related to the supposed substratum . . . the evidence of which is certainly not the evidence of the senses.'

In the last century the current of public opinion—and we know how powerful, how overwhelming that current can be at times—had been decidedly in favour of materialism, when Kant stood forth to stem and to turn the tide. He came so exactly in the nick of

[1] Berkeley's Works, vol. iv. p. 368.

[2] Logic, v. 7. 3.

time that one almost doubts whether the tide was turning, or whether he turned the tide. But what secures to Kant his position in the history of philosophy is that he brought the battle back to that point where alone it could be decided, that he took up the thread in the philosophical woof of mankind at the very point where it threatened to ravel and to break. He wrote the whole of his Critique of Pure Reason with constant reference to Berkeley and Hume; and what I think cannot be too severely blamed in modern philosophers is that, if they wish to go back to the position maintained by Hume or Locke, they should attempt to do it without taking into account the work achieved by Kant. To do this is to commit a philosophical anachronism, it is tantamount to removing the questions which now occupy us, from that historical stage on which alone they can be authoritatively decided to a mere debating club.

Was Kant's philosophy a compromise

It has sometimes been supposed that the rapid success of Kant's philosophy was due to its being a philosophy of compromise, neither idealistic, like Berkeley's, nor materialistic, like Hume's. I look upon Kant's philosophy, not as a compromise, but as a reconciliation of spiritualism and materialism, or rather of idealism and realism. But whatever view we may take of Kant, it is quite clear that, at the time when he wrote, neither Berkeley's nor Hume's followers would have accepted his terms. It is true that Kant differed from the idealists in admitting that the raw material of our sensations and thoughts is given to us, that we accept it from without, not from within. So far the realistic school might claim him as their

own. But when Kant demonstrates that we are not merely passive recipients, that the conception of a purely passive recipient involves in fact an absurdity, that what is given us we accept on our own terms, these terms being the forms of our sensuous perception and the categories of our understanding, then the materialist would see that the ground under his feet was no longer safe, and that his new ally was more dangerous than his old enemy.

Kant's chief object in writing the Critique of Pure Reason was to determine, once for all, the organs of our knowledge and their limits; and therefore, instead of criticising, as was then the fashion, the results of our knowledge, whether in religion, or in history, or in science, he boldly went to the root of the matter, and subjected Reason, pure and simple, to his searching analysis. In doing this he was certainly far more successful against Locke and Hume than against Berkeley. To call the human mind, as they did, a tabula rasa was pure metaphor, it was mythology and nothing else. Tabula rasa means a tablet, smoothed and made ready to receive the impressions of the pencil (γραφεῖον). It makes very little difference whether the mind is called a tabula rasa or a mirror, or wax, or anything else that the French call impressionable. Nor does it help us much if, instead of impressions, we speak of sensations, or states of consciousness, or manifestations. The question is, how these states of consciousness come to be, whether 'to know' is an active or a passive verb, whether there is a knowing Monon, and what it is like. If we begin with states of consciousness as ultimate facts, no doubt Hume and his followers are unassailable. Nothing can be more

Kant's chief object.

ingenious than the explanation of the process by which the primary impressions, by mere twisting and turning, develop at last into an intellect, the passive mirror growing into a conscious mind. The sensuous impressions, as they are succeeded by new impressions, are supposed to become fainter, and to settle down into what we call our memory. General ideas are explained as the inevitable result of repeated sensuous impressions. For instance, if we see a green leaf, the green sea, and a green bird, the leaf, the sea, and the bird leave each but one impression, while the impression of the green colour is repeated three times, and becomes therefore deeper, more permanent, more general. Again, if we see the leaf of an oak tree, of a fig tree, of a rose tree, or of any other plant or shrub, the peculiar outline of each individual leaf is more or less obliterated, and there remains, we are told, the general impression of a leaf. In the same manner, out of innumerable impressions of various trees arises the general impression of tree, out of the impressions of trees, shrubs, and herbs, the general impression of plant, of vegetative species, and at last of substance, animate or inanimate. In this manner it was supposed that the whole furniture of the human mind could be explained as the inevitable result of repeated sensuous impressions; and further, as these sensuous impressions, which make up the whole of what is called Mind, are received by animals as well as by men, it followed, as a matter of course, that the difference between the two was a difference of degree only, and that it was a mere question of time and circumstances for a man-like ape to develop into an ape-like man.

But what is that tabula rasa, which sounds so learned, and yet is mere verbal jugglery? Let us accept the metaphor that the mind is like a smooth writing-tablet with nothing in it or on it, and what can be clearer even then, than that the impressions made on it must be determined by the nature of such a tablet? Impressions made on wax are different from impressions made on sand or water, and impressions made on the human mind must likewise be determined by the nature of the recipient. We see therefore that the conditions under which each recipient is capable of receiving impressions, constitute at the same time the conditions or terms to which all impressions must submit, whether they be made on a tabula rasa, or on the human mind, or on anything else.

The Tabula rasa.

And here is the place where Kant broke through the phalanx of the sensualistic school. That without which no impressions on the human mind are possible or conceivable constitutes, he would say, the transcendental side of our knowledge. What, according to Kant, is transcendental is generally identified with what some philosophers call à priori, others subjective. But this is true in a very limited sense only. Kant does not mean by transcendental what is merely biographically, i. e. in each individual, or even palaeontologically, i. e. in the history of the whole race of man, à priori. The à priori in these two senses has to be discovered by experimental and historical psychology, and Kant would probably have no objection whatever to any of the conclusions arrived at in this domain of research by the most advanced evolutionist. The à priori which Kant tries to

The Conditions of Knowledge.

discover is a very different one, it is that which makes the two other à priori's possible; it is the ontologica. à priori. Let all the irritations of the senses, let all the raw material of our sensuous perceptions be given, the fact of our not simply yielding to these inroads, but resisting them, accepting them, realising them, knowing them, all this shows a reacting and realising power in our mind. If anything is to be seen, or heard, or felt, or known by us, such as we are—and, I suppose, we are something—if all is not to end with disturbances of the retina, or vibrations of the tympanum, or ringing of the bells at the receiving stations of the brain, then what is to be perceived by us must submit to the conditions of our perceiving, what is to be known by us must accept the conditions of our knowing. This point is of so much importance for the solution, or, at all events, for the right apprehension of the problem with which we have to deal, that we must examine Kant's view on the origin and on the conditions of our knowledge a little more carefully.

Forms of Sensuous Intuition.

According to Kant, then, there are, first of all, two fundamental or inevitable conditions of all sensuous manifestations, viz. Space and Time. They are called by Kant pure intuitions, which means à priori forms to which all intuitions, if they are to become our intuitions, must submit. By no effort can we do away with these forms of phenomenal existence. If we are to become conscious of anything, whether we call it an impression, or a manifestation, or a phase, we must place all phenomena side by side, and at a distance from ourselves, i. e. in space; and we can accept and retain them only as following each

other in succession, i. e. in time. If we wanted to make it still clearer that Time and Space are subjective, or at all events determined by us, we might say that there can be no There without a Here, there can be no Then without a Now, and both the Here and the Now depend on us as recipients, as measurers, as perceivers.

Mr. Herbert Spencer brings three arguments against Kant's view that Space and Time are à priori forms of our sensuous intuition. He says it is absolutely impossible to think that these forms of intuition belong to the ego, and not to the non-ego. Now Kant does not, according to the nature of his system, commit himself to any assertion that some such form may or may not belong to the non-ego, the Ding an sich; he only maintains that we have no means of knowing it. That Kant's view is not altogether unthinkable, as Mr. Spencer imagines, is proved by Berkeley and most Idealists. H. Spencer's objections.

Secondly, Mr. H. Spencer argues that if Space and Time are forms of thought, they can never be thought of, since it is impossible for anything to be at once the form of thought and the matter of thought. Here Mr. H. Spencer has evidently been misled by an imperfect translation of Kant. Kant never takes Space and Time as forms of thought. He carefully guards against this view, and calls them 'reine Formen sinnlicher Anschauung' (pure forms of sensuous intuition). But even if this distinction between thought and intuition, like all other distinctions, were eliminated by evolution, it has still to be proved that the forms of thought can never become the matter of thought. Would not this put an end to all philosophy, for it is surely one of the principal objects of

philosophy to make the forms of thought the matter of thought?

Thirdly, Mr. Spencer maintains that some of our sense-perceptions, and more particularly that of hearing, are not necessarily local. This objection again seems to me to rest on a misunderstanding of Kant's own words. Though it is true that we do not always know the exact place where sounds come from, we always know, even in the case of our ears ringing, that what we perceive is outside us, is somewhere, comes towards us; and that is all that Kant requires [1].

But besides these fundamental forms of sensuous intuition, Space and Time, without which no sensuous perception is possible, Kant, by his analysis of Pure Reason, discovered other conditions of our knowledge, the so-called Categories of the Understanding. While the sensualistic school, beginning with the ordinary à priori of experience, looked upon these forms of thought as mere abstractions, the residue or shadow of repeated observations, Kant made it clear that without them no experience, not even the lowest, would be possible, and that therefore they could not themselves be acquired by experience. Grant, he would say, that we have, we do not know how, the sensations of colour, sound, taste, smell, or touch. They are given, and we must accept them. But think of the enormous difference between a

[1] See T. H. Green, Works, vol. ii. p. 23. Mr. Herbert Spencer has tried to defend his views on Kant in some articles in the Fortnightly Review. His defence, like all he writes, is no doubt very able, but I gladly leave it to real students of Kant's works to judge for themselves whether Mr. H. Spencer has understood Kant rightly or not.

vibration and a sensation; and again between a succession or agglomeration of the sensations of yellowness, softness, sweetness, and roundness, and what we mean when we speak of an orange! The nerves may vibrate for ever—what would that be to us? The sensations might rush in for ever through the different gates of our senses; the afferent nerves might deliver them to one central point, yet even then they would remain but so many excitations of nervous action, so many sensations, coming and going at pleasure, but they would never by themselves produce in us the perception of an object, a substance and its attributes, which we call an orange. The common-sense view of the matter is that we perceive all these sensations together as an orange, because the orange, as such, exists forsooth without us as something substantial, and the qualities of yellowness, softness, sweetness, and roundness are inherent in it as attributes. This is, no doubt, very unphilosophical, and ignores the positive fact that all that we have consists and can consist of sensations and phases of consciousness only, and that nothing can ever carry us beyond. Yet there is this foundation of truth in the common-sense view, that it shows our utter inability of perceiving any sensations without referring them to something objective which causes them and is supposed to possess all those qualities which correspond to our sensations. If then we know that what is given us consists of phases of sensation only, whatever their origin may be, it ought to become clear, even to a man of common sense, that it can only be our mind, or whatever else we like to call it, which adds all the rest, and does this, not consciously or deliberately, but of necessity, and, as it were, in the dark.

We cannot receive sensations without at once referring them to a substantial cause. To say that these sensations may have no origin at all, would be to commit an outrage against ourselves. And why? Simply because our mind is so constituted that to doubt whether anything phenomenal had a cause would be a logical suicide. Call it what you like, a law, a necessity, an unconscious instinct, a category of the understanding, it always remains the fault of our mind that it cannot receive sensations without referring them to a substance of which they are supposed to tell us the attributes[1].

And if this is so, we have a clear right to say with Kant, that that without which even the lowest perception of an object is impossible, must be given, and cannot have been acquired by repeated perception. That what we mean by cause has no warrant in the Non-ego is a truth accepted, not only by Kant, but, though for a very different purpose, by Hume also; nay, there can be no doubt that on this point Kant owed very much to Hume's scepticism. Kant has nothing to say against Hume's argumentation that the ideas of cause and effect, of substance and quality, in that sense in which we generally use them, are not found in actual experience. But while Hume proceeded to discard those ideas as mere illusions, Kant, on the contrary, reclaimed them as the inevitable forms to which all phenomena must submit, if they are to be phenomena at all, if they

[1] Cf. Bacon, Nov. Org. i. 41: 'Omnes perceptiones, tam sensus quam mentis, sunt ex analogia hominis, non ex analogia universi. Estque intellectus humanus instar speculi inaequalis ad radios rerum, qui suam naturam naturae rerum immiscet, eamque distorquet et inficit.' Liebmann, Kant, p. 48.

are to become our phenomena, the simplest perceptions of a human mind. He established their truth, or, what with him is the same, their inevitability in all phenomenal knowledge, and by showing their inapplicability to any but phenomenal knowledge, he once for all determined the limits as well as the powers of human knowledge.

These inevitable forms were reduced by Kant to twelve, and he arranged them systematically in his famous Table of Categories :— Table of Categories.

(1) Unity, Plurality, Universality;
(2) Affirmation, Negation, Limitation;
(3) Substantiality, Causality, Reciprocity;
(4) Possibility, Actuality, Necessity.

We need not examine the character of these categories in detail, or consider the forms which they take as Schemata. What applies to one applies to all, viz. that without them no thought is possible. Take the categories of quantity, and try to think of anything, without thinking of it at the same time as one or many, and you will find it is impossible. Nature does not count for us, we must count ourselves, and the talent of counting cannot have been acquired by counting, any more than a stone acquires the talent of swimming by being thrown into the water.

Put in the shortest way, I should say that the result of Kant's analysis of the Categories of the Understanding is the very opposite of Locke's, namely, 'Nihil est in sensu, quod non fuerit in intellectu.' We cannot perceive any object, except by the aid of the intellect. Nihil est in sensu, quod non fuerit in intellectu.

It is no easy task to attempt to give in a few

words a true abstract of Kant's philosophy, yet if we wish to gain a clear view of the progressive, or in some cases retrogressive, movement of human thought from century to century, we must be satisfied with short abstracts, as long as they contain the essence of each system of philosophy[1]. We may spend years in exploring the course of a river, and we may have in our note-books accurate sketches of its borders, of every nook and corner through which it winds. But for practical purposes we want a geographical map, more or less minute, according to the extent of the area which we wish to survey; and here the meandering outline of the river must vanish, and be replaced by a bold line, indicating the general direction of the river from one important point to another, and nothing else. The same is necessary if we draw either for our own guidance or for the guidance of others, a map of the stream of philosophic thought. Whole pages, nay, whole volumes, must here be represented by one or two lines, and all that is essential is that we should not lose sight of the salient points in each system. It has been said that every system of philosophy lies in a nutshell, and this is particularly true of great and decisive systems. They do not wander about much; they go straight to the point. What is really characteristic in them is the attitude which the philosopher assumes towards the old problems of the world: that attitude once understood, and everything else follows almost by necessity.

In the philosophy of Kant two streams of philosophic thought, which had been running in separate

[1] An excellent account of the salient points of Kant's philosophy may be seen in some vigorous essays by W. L. Courtney, 'Studies in Philosophy,' 1882.

beds for ages, meet for the first time, and we can clearly discover in his system the gradual mingling of the colours of Hume and Berkeley. Turning against the one-sided course of Hume's philosophy, Kant shows that there is something within us which could never have been supplied from without; turning against the idealists, he shows that there is something without us which could never have been supplied from within. Sensation and intellect, he shows, exist for each other, depend on each other, presuppose each other, form together a whole that should never have been torn asunder. And he likewise shows that the two factors of our knowledge, the matter of our sensations on one side, and their form on the other, are correlative, so that any attempt at using the forms of our intellect on anything which transcends the limits of our sensations is, once for all, declared illegal.

Hence his famous saying, Begriffe ohne Anschauungen sind leer, Anschauungen ohne Begriffe sind blind. ('Conceptions without Intuitions are empty, Intuitions without Conceptions are blind.')

Begriffe ohne Anschauungen sind leer.

This last protest against the use of the categories with regard to anything not supplied by the senses is the crowning effort of Kant's philosophy, but, strange to say, it proved a protest unheeded by almost all philosophers who followed after Kant. To my mind Kant's general solution of the problem which divided Hume and Berkeley is perfect; and however we may criticise the exact number of the inevitable forms of thought, his Table of Categories as a whole will for ever remain the Magna Charta of true philosophy.

In Germany, although Kant's system has been

Post-Kantian Philosophers in Germany.

succeeded by other systems, his reply to Hume has never been challenged by any leading philosopher. It has been strengthened rather than weakened by subsequent systems which, though widely differing from Kant in their metaphysical conceptions, never questioned his success in vindicating certain ingredients of our knowledge as belonging to mind, not to matter; to the subject, not to the object; to the understanding, not to sensation; to the à priori, not to experience. They have indeed sadly disregarded Kant's warning that à priori laws of thought must not be applied to anything outside the limits of sensuous experience, but they have never questioned the true à priori character of those laws themselves.

In France.

Nor can it be said that in France the step which Kant had made in advance of Hume has ever been retraced by those who represent in that country the historical progress of philosophy. One French philosopher only, whose position is in many respects anomalous, Auguste Comte, has ventured to propose a system of philosophy in which Kant's position is not indeed refuted, but ignored. Comte did not know Kant's philosophy, and I do not think that it will be ascribed to any national prejudice of mine if I consider that this alone would be sufficient to exclude his name from the historical roll of philosophers. I should say just the same of Kant, if he had written in ignorance of Locke and Berkeley and Hume, or of Spinoza, if he had ignored the works of Descartes, or of Aristotle, if he had ignored the teaching of Plato [1].

[1] His own countryman, M. E. Renan, judges Comte much more harshly. 'Plus tard,' he writes, 'j'éprouvais une sorte d'agace-

It is different, however, in England. Here, a new school of philosophy has sprung up, not entirely free perhaps from the influence of Comte, but supported by far greater learning and real philosophical power, a school which deliberately ignores Kant's analysis, and falls back in the main on the position once occupied by Locke or Hume. Such a philosophy by appealing, as it always does, to the common sense of mankind, is sure of wide popular support. It falls in with the general tendencies of our age. It is short and easy, and enables a man to be a philosopher, not by studying Plato and Aristotle, Berkeley and Kant, but by ignoring, if not, by despising them. But there are serious philosophers also who do not ignore Kant, but in returning to the standpoint of Locke or Hume, distinctly assert that Kant has not made good his case, whether in his analysis of the two feeders of knowledge, or in his admission of synthetic judgments à priori or general truths, not attained and not attainable by experience. The law of causality on which the whole question of the à priori conditions of knowledge may be said to

ment à voir la réputation exagérée d'Auguste Comte, érigé en grand homme de premier ordre pour avoir dit en mauvais français ce que tous les esprits scientifiques depuis deux cent ans ont vu aussi clairement que lui.' (Revue des Deux Mondes, Dec. 1881, p. 741.) Professor Huxley is even more severe. 'The founder of Positivism,' he writes (Hume, p. 51), 'no less admirably illustrates the connexion of scientific incapacity with philosophical incompetence.' And again, p. 52: 'M. Comte would have found it hard to escape the admission that, in vituperating psychology, he had been propounding solemn nonsense.' It is easy to accuse German writers of philosophical Chauvinism; no German, so far as I know, has uttered more terrible condemnations of 'the Master' than Renan his own countryman, and Huxley, certainly no admirer of German metaphysics.

hinge is treated again, as it was by Hume, as a mere snare and illusion, a habit produced by the repeated succession of events; and psychological analysis, strengthened by physiological research, is called in to prove that mind is but the transient outcome of matter, that the brain secretes thought as the liver secretes bile. No phosphorus, no thought! is the triumphant war-cry of this school.

Difference between Mill and H. Spencer.

In speaking of the general tendencies of this school of thought, I have intentionally avoided mentioning any names, for it is curious to observe that hardly any two representatives of it agree even on the most essential points. No two names, for instance, are so frequently quoted together as representatives of modern English thought as Mr. Stuart Mill and Mr. Herbert Spencer, yet on the most critical point they are as diametrically opposed as Hume and Kant. Mr. Stuart Mill admits nothing à priori in the human mind; he stands on the same ground as Locke, nay, if I interpret some of his paragraphs rightly, he goes as far as Hume. Mr. Herbert Spencer, on the contrary, fights against this view of the human intellect with the same sharp weapons that Kant had used, and he arrives, like Kant, at the conclusion that there is in the human mind, such as we know it, something à priori, call it intuitions, categories, innate ideas or congenital dispositions, something at all events that cannot honestly be explained as the result of individual experience. The prehistoric genesis of these congenital dispositions or inherited necessities of thought, as suggested by Mr. Herbert Spencer, seems to me a mere shifting back of the difficulty which other

philosophers meet boldly face to face, and whether right or wrong, it would not help in solving the problem which Kant is dealing with[1]. The result of all this prehistoric genesis would be exactly those innatae ideae of Descartes, the ἀρχαὶ ἀναπόδεικτοι of Aristotle, which modern philosophy has long discarded, or at all events interpreted in a very different sense. In admitting, however, that there is something in our mind which is not the result of our own à posteriori experience, Mr. Herbert Spencer is a thorough Kantian, and we shall see that, without being aware of it, he is in other respects too far more of a Kantian than a Comtian. If it could be proved that nervous modifications, accumulated from generation to generation, could result in nervous structures that are fixed in proportion as the outer relations to which they answer are fixed, we, as followers of Kant, should only have to put in the place of Kant's intuitions of Space and Time 'the constant space relations, expressed in definite nervous structures, congenitally framed to act in definite ways, and incapable of acting in any other way.' If Mr. Herbert Spencer had not misunderstood the exact meaning of what Kant calls the intuitions of Space and Time, he would have perceived that, barring his theory of the pre-historic origin of these intuitions, he was with regard to them quite at one with Kant.

Some of the objections which Mr. Herbert Spencer urges against Kant's theory of innate intuitions

[1] 'People who think that the development of habits through hereditary transmission will account for the necessity of necessary truths, show that they do not know what is meant by such necessity.' T. H. Green, Works, vol. ii. p. 224.

of Space and Time were made so soon after the appearance of his work, that Kant himself was still able to reply to them[1]. Thus he explains himself that by forms of intuition he does not mean anything innate, in the form of ready-made ideas or images, but merely inevitable receptivities of the Ego, according to which, if affected in certain ways, it represents these affections in certain forms. What is innate is not the representation itself, but simply the first formal cause of its possibility.

Kant's answers.

Nor do I think that Kant's view of causality, as the most important category of the understanding, has been correctly apprehended by his English critics. All the arguments that are brought forward by the living followers of Hume, in order to show that the idea of cause is not an innate idea, but the result of repeated observations, and, it may be, a mere illusion, do not touch Kant at all. He moves in quite a different layer of thought. That each individual becomes conscious of causality by experience and education, he knows as well as the most determined follower of Hume; but what he means by the category of causality is something totally different. It may almost be called an unconscious process, and, from a purely psychological point of view, might truly be treated as prehistoric. So far from being the result of repeated observations, Kant shows that what he means by the category of causality is the sine qua non of the simplest perception, and that

[1] See Das Unbewusste, vom Standpunkt der Physiologie und Dèscendenztheorie, p. 187; Kant's Werke, ed. Rosenkranz, B. i. pp. 445, 446.

without it we might indeed have states of feeling, but never a sensation of *something*, an intuition of an *object*, or a perception of a *substance*. Were we to accept the theory of evolution which traces the human mind back to the inner life of a mollusc, we should even then be able to remain Kantians, in so far as it would be, even then, the category of causality that works in the mollusc, and makes it extend its tentacles towards the crumb of bread which has touched it, and has evoked in it a reflex action, a grasping after the prey. In this lowest form of animal life, therefore, the category of causality, if we may use such a term, would show itself simply as a half-conscious, or, at all events, as a no longer involuntary reaction; in human life we might say that it shows itself clearly in the first glance of recognition that lights up the infant's vacant stare.

This is what Kant means by the category of causality, and no new discoveries, either in the structure of the organs of sense or in the working of the mental faculties, have in any way, so far as I can see, invalidated his conclusions that that category at all events, whatever we may think of the others, is à priori in every sense of the word, is the sine qua non of all thought. It may be, for all we know, a ψεῦδος, but to us it is and must remain an ἀληθινον ψεῦδος.

Among German philosophers there is none so free from what are called German metaphysical tendencies as Schopenhauer, yet what does he say of Kant's view of causality?

Schopenhauer on Kant's view of Causality.

'Sensation,' he says, 'is something essentially sub-

jective, and its changes are brought to our cognisance in the form of the internal sense only, therefore in time, i. e. in succession[1]. The understanding, through a form belonging to it and to it alone, viz. the form of causality, takes hold of the given sensations, à priori, previous to all experience (for experience is not yet possible), as effects which, as such, must have a cause; and through another form of the internal sense, viz. that of space, which is likewise pre-established in the intellect, it places that cause outside the organs of sense.' And again: 'As the visible world rises before us with the rising of the sun, the understanding, by its one simple function of referring all effects to a cause, changes with one stroke all dull and unmeaning sensations into intuitions. What is felt by the eye, the ear, the hand, is not intuition, but only the data of intuition. Only by the step which the understanding makes from effect to cause, the world is made, as intuition, extended in space, changing in form, permanent in substance; for it is the understanding which combines Space and Time in the conception of matter, that is, of activity or force.'

Helmholtz on Causality.

Professor Helmholtz, again, who has analysed the external apparatus of the senses more minutely than any other philosopher, and who, in England at all events, would not be denied the name of a philosopher, arrives, though starting from a different point, at identically the same result as Schopenhauer.

'It is clear,' he says, 'that starting with the world of our sensations, we could never arrive at the con-

[1] See Liebmann's remarks on this, Objectiver Anblick, p. 114.

ception of an external world, except by admitting, from the changing of our sensations, the existence of external objects as the causes of change; though it is perfectly true that, after the conception of such objects has once been formed, we are hardly aware how we came to have this conception; because the conclusion is so self-evident that we do not look upon it as the result of a conclusion. We must admit therefore that the law of causality by which from an effect we infer the existence of a cause, is to be recognised as a law of our intellect, preceding all experience. We cannot arrive at any experience of natural objects without having the law of causality acting within us; it is impossible therefore to admit that this law of causality is derived from experience.'

I have just time to add two utterances of another German philosopher and physiologist, Virchow, who in his address to the Naturforscher-Versammlung, in September, 1886, remarks: 'What is seeing without thinking?' nay, who seems to have discerned how indispensable language is to thought, when he adds: 'Only after their perceptions have become fixed by language, are the senses brought to a conscious possession and a real understanding of them.'

Strengthened by such support from very opposite quarters, we may now sum up Kant's argument in favour of the transcendental or à priori character of this and the other categories in this short sentence:—

That without which no experience, not even the simplest perception of a stone or a tree, is possible, cannot be the result of repeated perceptions. And we may add as a corollary: All percepts are conceptual.

CHAPTER IV.

LANGUAGE THE BARRIER BETWEEN MAN AND BEAST.

Kant and Darwin.

It was necessary to give at least this general outline of the position which Kant[1] had taken up in the history of philosophic thought in order to substantiate the charge which I brought, not so much against Darwin himself, as against certain philosophers who wish to fortify their own position by his powerful name, namely the charge of being unhistorical, that is of being outside the great and continuous stream of the history of philosophy, or having neglected to pay that attention and respect to their predecessors which they deserve. I believe that if Darwin himself had been acquainted with the evolution of philosophic thought as he was with the evolution of nature, he would have seen that there is something in man which he could not have inherited from a monkey, and he would probably, like Helmholtz,

[1] For a fuller treatment of Kant's philosophy I must refer to my translation of Kant's Critique of Pure Reason, published in 1881, in commemoration of the centenary of its first publication, and, more particularly, to Professor Noiré's 'The Critique of Pure Reason, as illustrated by a sketch of the Development of Occidental Philosophy,' contained in the first volume of my translation of Kant's Critique. The same writer has treated the same subject more fully in Die Entwickelung der abendländischen Philosophie bis zur Critik der reinen Vernunft, 1883, the best introduction, I think, to a scholarlike study of Kant.

have modified his opinion of the descent of man, or would at all events have considered it his duty to show how this opinion could be defended against the arguments of thinkers who were his peers in knowledge, in power of reasoning, and in honesty of purpose. Such is my belief in Darwin's intellectual honesty that I should not have been surprised at his giving up his theory of the descent of man from an ape or some kind of animal, if he had been acquainted with Kant's Critique of Pure Reason. I had the privilege of corresponding and conversing with Darwin, after I had delivered my Lectures at the Royal Institution in 1873, and though he was unable to discuss the whole question with me, because, as he said, his knowledge on the subject of languages was only derived from a few personal friends, he said to me in the kindest, half-humorous, half-serious way, 'You are a dangerous man.' Far be it from me to see in those words more than a good-natured compliment; but they showed at all events that Darwin's mind remained accessible to argument to the very end of his life. What made me bold to urge my views against his was that I felt myself perfectly free from any prejudice, whether on the ground of theology or on the ground of human pride, and that I did not see how the descent of man from some other special animal was a necessary consequence of Darwin's own view of evolution. If, like others, he had admitted but one primordial form, the case would have been different, and he would almost have been forced to admit that man was the child of some other animal, or the result of a special creation. But as in spite of the pressure of his friends, Darwin's scientific conscience would not yield on that point,

I could not see that the admission of an independent beginning of man would have conflicted with the fundamental principles of his philosophy. It is different with the student of language and of thought. If his view of language is right, the admission of the descent of man from an ape is impossible.

This shows the immense importance of the Darwinian theory, of which he himself seems hardly to have been aware, in solving once for all questions which have been discussed since the first dawn of philosophy, and which seemed to have been finally settled by Kant; and it shows, I hope, at the same time that the verdict on this disputed inheritance must be signed not by zoologists and physiologists only, but by psychologists also, and, before all, by the students of language.

Unnecessary Dogmatism.

It sometimes seems to me as if those who profess to be the followers of Darwin speak often far more dogmatically than Darwin himself on the results already obtained by a genealogical arrangement of organic beings beginning with a group of animals, boldly called 'organisms without organs,' such as the Bathybius Haeckelii[1], and advancing step by step to the most highly organised mammals. If men like Carl Vogt could be accepted as the recognised representatives and spokesmen of the Darwinian school, all would seem to be settled; there would be no gaps or flaws anywhere: it would be sheer ignorance to doubt the direct descent of man from a monkey, and his indirect descent from the primordial Moneres. But even Haeckel, perhaps the most fiery apostle of Darwinism in Germany, does

[1] Haeckel, Natürliche Schöpfungsgeschichte, p. 165.

not go quite so far, and in his work on Kalkschwämme (9. p. 12) he admits that the majority, and among it some famous biologists of the first class, are still of opinion that the problem of the origin of species has only been opened by Darwin, but by no means solved.'

Monogenetic and Polygenetic Theory.

In another place Professor Haeckel is very anxious[1] to convince his readers that the difference between these two schools, the monogenetic and polygenetic, is of small importance. The difference, he says, between the various Moneres, whose bodies consist of simple matter without form or structure, and which are in fact no more than a combination of carbon in the form of white of eggs, are of a chemical nature only, and the differences of mixture in the endless varieties of combination of white of eggs are so fine as to be for the present beyond the powers of human perception. But if this is so, surely the rule of all scientific research would be to wait before definitely deciding in favour of one primordial cell and thus creating new trammels in the progress of free inquiry.

Whatever the physiologists may say to the contrary, it does make a very great difference to the philosopher, whether the beginning of organic life has happened once, or may be supposed to have happened repeatedly; and though I do not grudge to the Bathybius the dignity of a new Adam, I cannot help feeling that in this small speck of slime, dredged up from the bottom of the Atlantic Ocean, there is too much of the old Adam, too much of what I call

[1] Haeckel, l. c., p. 372.

mythology, i. e. too much of human ignorance concealed under the veil of dogmatic knowledge.

These remarks are not intended to throw doubt or discredit on Darwin's work, but only to protest against the extreme dogmatism with which some of his followers speak of the results already obtained. Whatever modification Darwin's system may receive at the hands of professed physiologists, the honour of having cleared the Augean stables of endless species, of having explained many things which formerly seemed to require repeated acts of direct creation, as resulting from the slow action of natural causes, of having made us see the influence exercised by the individual on the family and by the family on the individual, of having given to the world a few really new and fresh ideas, will always remain his own.

Common origin of mankind.

I speak feelingly on this subject, for I am old enough to remember how much the progress of the Science of Language was impeded by the equally dogmatic veto which not very long ago the most eminent physiologists put on the theory of a common origin of the different races of man. When my own researches into language and the intellectual development of man led me to the conclusion that, if we had only sufficient time allowed us—certainly more than the chronology of the Bible would sanction—there would be no difficulty in giving an intelligible account of the common origin of all languages, I was met with the assurance that even hypothetically such a view was quite inadmissible, because the merest beginner in anatomy knew that the different races of man constituted so many species, that species were the result

of independent creative acts, and that the black, brown, red, yellow, and white races could not possibly be conceived as descended from one pair. Men like Prichard and A. von Humboldt, who maintained the possibility of a common origin, were suspected of being influenced by extraneous motives. I myself, because I lived at Oxford, was charged with a superstitious belief in Adam and Eve and the rest of the Mosaic ethnology! And why? Simply because in the science of language I was a Darwinian before Darwin; simply because I had protested against scientific as strongly as against theological dogmatism; simply because I wished the common origin of languages to be treated at least as an open question [1].

But with all my gratitude to Darwin for having put an end to the terrorism of those physiologists who raised every variety into a species, and insisted on an independent act of creation or at all events on an independent origin for every variety of living beings, I think he allowed himself to be carried away when he denied an independent origin to man. I admire his wise discretion in not attempting to reduce all organic beings to one ancestor as well as his wisdom in never attempting to explain the first beginnings of organic life either as acts of creation or as generatio spontanea or as Urschleim; but why he should have thought it impossible that in addition to his four progenitors, there was a fifth progenitor for man, I cannot under-

Independent origin of man.

[1] 'On the Possibility of a Common Origin of Language,' in my Letter to Bunsen, 'On the Turanian Languages,' published in Bunsen's Christianity and Mankind, 1854.

stand. We must reason here as we do elsewhere. If Darwin had discovered something, however small in appearance, in the horse, which it could not possibly have inherited from the hipparion, he would never have represented the hipparion as the progenitor of the horse. If then there is something in man which could not possibly have been inherited from a monkey or any other animal, something of which even the most rudimentary germs are absent in the whole animal genus, something which has imparted to man a character entirely different from all other living beings, namely language, why represent him as the descendant of an unknown, but certainly speechless ape?

Transition from animal to man inconceivable.

I know it has been argued that a transition from animal to man is at least conceivable, and that our freedom of enquiry ought not to be fettered by excluding possibilities from the pale of legitimate reasoning. What is conceivable, however, depends quite as much on the conceiver as on the conceived, and I maintain that no one who knows the true nature of language could conceive how any animal, from the lowest to the highest, could ever have developed speech. But whatever may be conceivable or inconceivable, is there not something in what is real, that is, in the fact that no living being, except man, has ever developed speech? It seems to me far more conceivable that a fish should suckle her young, because the whale (Walfisch) does, than that the most highly developed monkey should ever frame a grammatical language, because a bird sings. To admit everything as conceivable, may be very excellent in theory, and, as mere logicians, we may all admit

that the sun need not rise to-morrow. It is conceivable that trees should grow into the sky, and that birds should fly into the moon. To say that they would die, is saying nothing; for why should they not possess the power of adapting themselves to new environments, a power so largely claimed for all other beings?

But I doubt whether that neutral state of mind is the best adapted for real work, and for the advancement of real knowledge. The chemist who, for the time being, denies the possibility or at least the admissibility of a decomposition of what he calls elementary substances, and who declares a change of lifeless into living matter as for the present inconceivable, is far more likely to advance his science than he who from the beginning looks upon everything as possible, and who considers the Broad Lines which keep order in nature and render many things impossible, as purely imaginary limits.

It seems to me far more useful if philosophers would try to discover why there are such hard and fast lines drawn across the vast plan of nature, why certain creatures never pass certain limits, and why man, for instance, was able or was forced to generalise, to form a world of concepts or roots, to derive from these roots, names of new concepts, to elaborate, in fact, language and reason, and then to make language the foundation of a culture, which marvellous as it is in our century, is probably the seed only for a future growth far richer than has yet been witnessed.

If we do not simply play with words, if we take conceivable in that sense which it has among professional students of every science, viz. something

which is in accordance with known facts, then we ought not to say that the elaboration of language by any animal, except man, is conceivable; but, on the contrary, it becomes our duty to warn the valiant disciples of Darwin that, before they can claim a real victory, before they can call man a descendant of a mute animal, they must lay a regular siege to a fortress which is not to be frightened into submission by a few random shots, the fortress of language, which as yet stands untaken and unshaken on the very frontiers between the animal kingdom and the kingdom of man.

Darwin on the Descent of Man.

Let us now see what Darwin himself has to say in support of his opinion that man does not date from the same period which marks the beginning of organic life on earth, that he has not an ancestor of his own, like the other great families of living beings, but that he had to wait till the mammals had reached a high degree of development, and that he then stepped into the world as the young or as the child of an ape. Much stress has been laid on this, as a kind of salve to our wounded pride, that man need not consider himself as the direct descendant of any living kind of ape[1], and that he may be laterally only, not lineally descended from a catarrhine ape. I see no meaning in this, nor have I ever understood how the wounded pride of man could be an element in our search for truth. The question is not whether the belief that animals so distant as a man, a monkey, an elephant, and a humming-bird, a snake, a frog, and a fish could all have sprung from the same parents is monstrous[2],

[1] Haeckel, Vorlesungen, p. 577.

[2] Darwin's Descent, vol. i. p. 203.

but simply and solely whether it can be proved. Appeals to the pride or humility of man, to scientific courage or religious piety, are all equally out of place. We do not complain of the injustice or indignity of our having individually to be born or to die, of our passing through the different stages of embryonic life, of our being made of dust, that is of exactly the same chemical materials from which the bodies of animals are built up[1]. Fact against fact, argument against argument, that is the rule of scientific warfare; a warfare in which to confess oneself convinced or vanquished by truth is often far more honourable than victory.

But while protesting against these sentimental outcries, we ought not to allow ourselves to be intimidated either by scientific clamour. It seems to me a mere dogmatic assertion to say[2] 'that it would be unscientific to consider the hand of a man or a monkey, the foot of a horse, the flipper of a seal, the wing of a bat, as having been formed on the same ideal plan.' Even if 'their descent from a common progenitor, together with their adaptation to diversified conditions,' were proved by irrefragable evidence, the conception of a general ideal plan would remain perfectly legitimate. I can understand the view of the evolutionist, who looks upon an organ as so much protoplasm, which, according to circumstances, may assume any conceivable form, and who treats all environing circumstances as facts requiring no explanation; but I am not prepared to say that Kant's view is altogether unphilosophical when he says, 'Every change in a substance depends on its

[1] Bradley, Principles of Logic, p. 466.

[2] Darwin, Descent, vol. i. p. 32.

connection with and reciprocal action on other substances, and that reciprocal action cannot be explained, except through a Divine mind, as the common cause of both[1].' At all events, the conception that all these modifications in the ascending scale of animal life are the result of natural selection, transcends the horizon of our understanding quite as much as the conception that the whole creation was foreseen at once, and that what seems to us the result of adaptation through myriads of years, was seen as a whole from beginning to end by the wisdom and power of a Divine Mind. I do not adopt that language, at least not in its usual sense. To my mind both these views are transcendent, both belong to the domain of faith; but if it were possible to measure the wonders of this universe by degrees, I confess that the self-evolution of a cell which contains within itself the power of becoming a man, or the admission of a protoplasm which in a given number of years would develop into a homunculus or a Shakespeare, nay, the mere formation of a nucleus which would change the moneres into an amoeba, would far exceed in marvellousness all the speculations of Plato and the wonders of Genesis. The two extremes of scientific research and mythological speculation seem sometimes on the point of meeting; and when I listen to the language of the most advanced biologists, I almost imagine I am listening to one of the ancient hymns of the Veda, and that we shall soon have to say again, 'In the beginning there was the golden egg.'

It is easy to understand that the Darwinian school, having brought itself to look upon the divers forms

[1] Zeller, Zur Geschichte der Deutschen Philosophie, p. 413.

of living animals as the result of gradual development, should have considered it an act of intellectual cowardice to stop short before man. The gap between man and the higher apes may, from an anatomical point of view, be very small, whereas the gap between the ape and the moneres is enormous. If, then, the latter could be cleared, how could we hesitate about the former? Few of those who have read Darwin or Haeckel could fail to feel the force of this appeal; and so far from showing a want of courage, those who resist it require really all the force of intellectual convictions to keep them from leaping with the rest.

Language as the specific difference between animal and man.

I cannot follow Darwin, because I hold that this question is not to be decided in an anatomical theatre only. By no effort of the understanding, by no stretch of imagination, can I explain to myself how language could have grown out of anything which animals possess, even if we granted them millions of years for that purpose. If anything has a right to the name of specific difference, it is language, as we find it in man, and in man only. Even if we removed the name of specific difference from our philosophic dictionaries, I should still hold that nothing deserves the name of man except what is able to speak. If Mr. Mill[1] maintains that a rational elephant could not be called a man, all depends on what he means by rational. But it may certainly be said with equal, and even greater truth, that a speaking elephant, in the true sense of the word, could never be called an elephant. I can bring myself to

[1] Logic, i. 38.

imagine with evolutionist philosophers that that most wonderful of organs, the eye, has been developed out of a pigmentary spot, and the ear out of a particularly sore place in the skin; that, in fact, an animal without any organs of sense may in time grow into an animal with organs of sense. I say I can imagine it, and I should not feel justified in classing such a theory as utterly inconceivable. But taking all that is called animal on one side, and man on the other, I must call it inconceivable that any known animal could ever develop language.

Schleicher on language.

Professor Schleicher, though an enthusiastic admirer of Darwin, observed once jokingly, but not without a deep irony, 'If a pig were ever to say to me, "I am a pig," it would ipso facto cease to be a pig.' This shows how strongly he felt that language was out of the reach of any animal, and constituted the exclusive or specific property of man. I do not wonder that Darwin and other philosophers belonging to his school should not feel the difficulty of language as it was felt by Professor Schleicher, who, though a Darwinian, was also one of our best students of the Science of Language. But those who know best what language is, and still more, what it presupposes, cannot, however Darwinian they may be on other points, ignore the veto which, as yet, that science enters against the last step in Darwin's philosophy.

Darwin's insensible degrees.

Let us examine Darwin's line of argument a little more closely[1]. He says that in a series of forms graduating insensibly from some ape-like creature to man as he now

[1] Descent, vol. i. p. 235.

exists, it would be impossible to fix on any definite point where the term 'man' ought to be used.

My objections to these words of Darwin are two-fold: first, as to form; secondly, as to substance.

With regard to the form which Darwin has given to his argument, it need hardly be pointed out that he takes for granted in the premiss what is to be established in the conclusion. If there existed a series graduating insensibly from some ape-like creature to man, then, no doubt, the very fact that the graduation is insensible would preclude the possibility of fixing on any definite point where the animal ends and man begins. This, however, may be a mere slip of the pen, and might have been passed by unnoticed, if it were not that the same kind of argument occurs not unfrequently in the works of Darwin's followers. Whenever the distance between the two points in the chain of creation seems too great, and there is no chance of finding the missing links, we are told again and again that we have only to imagine a large number of intermediate beings, insensibly sloping up or sloping down, in order to remove all difficulty.

Whenever I meet with this line of reasoning, I cannot help thinking of an argument used by Hindu theologians in their endeavours to defend the possibility and the truth of a Divine revelation. Their opponents say that between a Divine Being, who they admit is in possession of the truth, and human beings who are to receive the truth there is a gulf which nothing can bridge over; and they go on to say that, admitting that Divine truth, as revealed, was perfect in the Revealer, yet the same Divine truth, as seen by human beings, must be liable to

all the accidents of human frailty and fallibility. The orthodox Brâhmans grow very angry at this, and appealing to their sacred books, they maintain that there was between the Divine and the human a chain of intermediate beings, Rishis or seers, as they call them; that the first generation of these seers was, say, nine-tenths divine and one-tenth human; the second, eight-tenths divine and two-tenths human; the third, seven-tenths divine and three-tenths human; that each of these generations handed down revealed truth, till at last it reached the ninth generation, which was one-tenth divine and nine-tenths human, and by them was preached to ordinary mortals, being ten-tenths or altogether human. In this way they feel convinced that the gulf between the Divine and the human is safely bridged over; and they might use the very words of Mr. Darwin, that in this series of forms graduating insensibly from the Divine to the human, it is impossible to fix on any definite point where the term 'man' ought to be used.

This old fallacy of first imagining a continuous scale, and then pointing out its indivisibility, affects more or less all systems of philosophy which wish to get rid of specific distinctions. That fallacy lurks in the word 'Development,' which is now so extensively used, but which requires very careful testing, before it should be allowed to become a current coin in philosophical transactions. The admission of this insensible gradation would eliminate, not only the difference between ape and man, but likewise between black and white, hot and cold, a high and a low note in music; in fact, it would do away with the possibility of all exact and definite knowledge, by removing those wonderful lines and laws of nature which

change the Chaos into a Kosmos, the Infinite into the Finite, and which enable us to count, to tell, and to know.

There have always been philosophers who have an eye for the Infinite or the Indefinite only, who see All in One, and One in All. Herakleitos.

One of the greatest sages of antiquity, nay, of the whole world, Herakleitos (460 B. C.), summed up the experience of his life in the famous words, *πάντα χωρεῖ καὶ οὐδὲν μένει*, 'All is moving, and nothing is fixed,' or as we should say, 'All is growing, all is developing, all is evolving.' But this view of the universe was met, it may be by anticipation, by the followers of Pythagoras. When Pythagoras was asked what was the wisest of all things, he replied, 'Number,' and next to it, 'He who gave names to all things.' How should we translate this enigmatical saying? I believe, in modern philosophical language, it would run like this: 'True knowledge is impossible without definite concepts (that is, number), and without definite signs for these concepts (that is, language).'

The Herakleitean view is now again in the ascendant. All is changing, all is developing, all is evolving. Ask any evolutionist philosopher whether he can conceive any two things so heterogeneous that, given a few millions of years and plenty of environment, the one could not develop into the other, and I believe he will say, No. I do not argue here against this line of thought; on the contrary, I believe that in one sphere of mental aspirations it has its legitimate place. What I protest against is this, that in the sphere of exact knowledge we should allow ourselves to be deceived by inexact

language[1]. 'Insensible gradation' is self-contradictory. Translated into English, it means gradation without gradation, degrees without degrees, or something which is at the same time perceptible and imperceptible. Millions of years will never render the distance between two points, however near to each other, imperceptible. If the evolutionist philosopher asks for a few millions of years, the specialist philosopher asks for eyes that will magnify a few million times, and the Bank which supplies the one will readily supply the other. Exact science has nothing to do with insensible gradation. It counts thousands of vibrations that make our imperfect ears hear definite tones; it counts millions of vibrations that make our weak eyes see definite colours. It counts, it tells, it names, and then it knows; though it knows at the same time that, beyond the thousands and beyond the millions of vibrations, there is that which man can neither count, nor tell, nor name, nor know, the Unknown, the Unknowable, the Infinite, the Divine.

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[1] Chamisso, in his 'Voyage round the World,' 1815–1818 (Works, vol. i. p. 317), says, 'I have indeed during my life written many a fairy-story, but I take care that in scientific researches fancy should never carry me beyond the boundaries of experience. I cannot find rest intellectually in such a Nature as the believers in metamorphosis have invented. Species and genera must be constant, or they are not species and genera. What would separate me, homo sapiens, from the animal, the perfect or imperfect, from the plant, the perfect or imperfect, if every individual could progressively or retrogressively pass from one state to another? I see in my algae nothing but a sphaerococcus, grown on a conferva, not as the mistletoe grows on a tree, but like a moss or lichen.' (Some of the sea-plants which Chamisso had brought home from the Cape had been used as evidence in favour of the transition of species and genera.)

But if we return to Darwin's argument, and simply leave out the word 'insensibly,' which begs the whole question, we shall then have to meet his statement, that in a series of forms graduating from some ape-like creature to man as he now is, it would be impossible to fix on any definite point where the term 'man' ought to be used. This statement I meet by a simple negative. Even admitting, for argument's sake, the existence of a series of beings intermediate between ape and man—a series which, as Darwin himself repeatedly states, does not exist[1] —I maintain that the point where the animal ends and man begins could be determined with absolute precision, for it would be coincident with the beginning of the Radical Period of language, with the first formation of general concepts, embodied in the only form in which we find concepts embodied, viz. in the roots of our language.

Darwin's arguments against Language as a specific difference.

Darwin was, of course, not unprepared for that answer. He remembered the old pun of Hobbes, Homo animal rationale, quia orationale (man is a rational animal, because he is an orational animal), and he makes every effort in order to eliminate language as something unattainable by the animal, as something peculiar to man, as a specific difference between man and beast. In every book on Logic, language is quoted as the specific difference between man and all other beings. Thus we read in Mr. Mill's Logic[2]: 'The attribute of being capable of understanding a language is a proprium of the species man, since, without being

[1] Descent, vol. i. p. 185.

[2] Vol. i. p. 180.

connoted by the word, it follows from an attribute which the word does connote, viz. from the attribute of rationality.'

It is curious to observe how even Darwin seems, in some places, fully prepared to admit this. Thus he actually says in one passage[1], 'Articulate language is peculiar to man.' In former days we could not have wished for a fuller admission, for peculiar then meant the same as specific, something that constitutes a species, or something which belongs to a person in exclusion of all others. But in a philosophy which looks upon all living beings as developed from four or five primordial cells, there can, in strict logic, exist four or five really and truly peculiar characters only, and it is therefore clear that peculiar, when used by Mr. Darwin, does not mean what it would have meant, if employed by others.

As if to soften the admission which he had made as to articulate language being peculiar to man, Darwin continues: 'But man uses, in common with the lower animals, inarticulate cries to express his meaning, aided by gestures and the movements of the muscles of the face.' No one would deny this. There are many things besides, which man shares in common with animals. In fact, the discovery that man is an animal was not made yesterday, and no one seemed to be disturbed by that discovery. Man, however, was formerly called a 'rational animal,' and the question is, whether he possesses anything peculiar to himself, or whether he represents only the highest form of perfection to which an animal, under favourable circumstances, may attain. Darwin dwells more fully on the same

[1] Descent, vol. i. p. 54.

point, viz. on that kind of language which man shares in common with animals, when he says, 'This holds good, especially with the more simple and vivid feelings, which are but little connected with our higher intelligence. Our cries of pain, fear, surprise, anger, together with their appropriate actions, and the murmur of a mother to her beloved child, are more expressive than any words.'

No doubt they are. A tear is more expressive than a sigh, a sigh is more expressive than a speech, and silence itself is sometimes more eloquent than words. Saepe tacens vocem verbaque vultus habet. But all this is not language in the true sense of the word.

Darwin himself feels evidently that he has not said all; he struggles manfully with the difficulties before him; nay, he really represents the case against himself as strongly as possible. 'It is not the mere power of articulation,' he continues, 'that distinguishes man from other animals, for, as every one knows, parrots can talk; but it is his large power of connecting definite sounds with definite ideas.'

Here, then, we might again imagine that Darwin admitted all we want, viz. that some kind of language is peculiar to man, and distinguishes man from other animals; that, supposing man to be, up to a certain point, no more than an animal, he perceived that what made man to differ from all other animals was something nowhere to be found except in man, nowhere indicated even in the whole series of living beings, beginning with the Bathybius Haeckelii, and ending with the tail-less ape. But, no; there follows, immediately after, the finishing sentence, extorted rather, it seems to me, than naturally flowing from

his pen, 'This obviously depends on the development of the mental faculties.'

What can be the meaning of this sentence? If it refers to the mental faculties of man, then no doubt it may be said to be obvious. But if it is meant to refer to the mental faculties of the gorilla, then, whether it be true or not, it is, at all events, so far from being obvious, that the very opposite might be called so—I mean the fact that no development of mental faculties has ever enabled one single animal to connect one single definite idea with one single definite word.

I do not deny that there is some force in Darwin's remark, that both man and monkey are born without language: but the real problem which this remark places before us is why a man always learns to speak, a monkey never; why a Fuegian savage, though when caught only able to cluck like a hen (teste Darwin), learns, when brought to England, to talk a little English (teste Darwin), but a Gorilla never[1]. Are facts to be of no value any longer? If we say that under favourable circumstances, an unknown kind of primeval monkey may have learnt to speak, and thus, though his descendants, have become what he is now, viz. a man, we deal in fairy stories, but not in scientific research. Darwin says that 'language is certainly not a true instinct, as every language has to be learnt.' Yes, every language has to be learnt, but who made the language that has to be learnt? It matters little whether we call language an instinct, a gift, a talent, a faculty, or

[1] Narrative of Surveying Voyages of the *Adventure* and *Beagle*, vol. ii. pp. 2, 121, 189; Dr. Bateman, Darwinism tested by Language, p. 20.

the proprium of Man; certain it is that neither language, nor the power of language, nor the conditions under which alone language can exist, are to be discovered anywhere in the whole animal kingdom, except in man.

I confess that after reading again and again what Darwin has written on the subject of language, I cannot understand how he could bring himself to sum up the subject as follows: 'We have seen that the faculty of articulate speech in itself does not offer any insuperable objection to the belief that man has been developed from some lower animal.'

Now the fact is that not a single instance has ever been adduced of any animal trying or learning to speak, still less of forming a language; nor has it been explained by any scholar or philosopher how that barrier of language which divides man from all animals might be effectually crossed. I do not mean to say that there are no arguments which might be urged, either in favour of animals possessing the gift of language, but preferring not to use it[1], or as tending to show that living beings, to use the words of Demokritos, speak naturally and in the same manner in which they cough, sneeze, bellow, bark, or sigh. But Darwin has never told us what he thinks on this point. He refers to certain writers on the origin of language, who consider that the first materials of language are either interjections or imitations; but their writings in no wise support the theory that animals also could, either out of their own barkings and bellowings, or out of the imitative sounds of mocking-birds, have elaborated anything like what we mean by language, even among the lowest savages.

[1] See Wundt, Menschen und Thierseele, vol. ii. p. 265.

It may be in the recollection of some of my readers that, in my Lectures on the Science of Language, when speaking of Demokritos and some of his later followers, I called his theory on the origin of language the Bow-wow theory, because I felt certain that, if this theory were only called by its right name, it would require no further refutation. It might have seemed for a time, to judge from the protests that were raised against that name, as if there had been in the nineteenth century scholars holding this Demokritean theory in all its crudity. But it required but very little mutual explanation before these scholars perceived that there was between them and me but little difference, and that all which the followers of Bopp insisted on as a sine qua non of scholarship was the admission of roots, definite in their form, from which to derive, according to strict phonetic laws, every word that admits of etymological analysis, whether in English and Sanskrit, or in Arabic and Hebrew, or in Mongolian and Finnish. For philological purposes it matters little, as I said in 1866, what opinion we hold on the origin of roots so long as we agree that, with the exception of a number of purely mimetic expressions, all words, such as we find them, whether in English or in Sanskrit, encumbered with prefixes and suffixes, and mouldering away under the action of phonetic decay, must in the last instance be traced back, by means of definite phonetic laws, to those definite primary forms which we are accustomed to call roots. These roots stand like barriers between the chaos and the kosmos of human speech. Whoever admits the historical character of roots, whatever opinion he may hold on their origin, is not a Demokritean, does

not hold that theory which I called the Bow-wow theory, and cannot be quoted in support of Darwin's opinion that the cries of animals represent the earliest stage in the language of man.

If we speak simply of the materials, not of the elements, of language—and the distinction between these two words is but too often overlooked—then, no doubt, we may say that the phonetic materials of the cries of animals and the languages of man are the same. All that can be said on the possible transition from the cries of animals and our own cries of pain and joy to articulate speech, has been well said two thousand years ago, when Lucretius wrote (v. 1056), in his own persuasive way :—

Materials and Elements of Language.

> Postremo, quid in hac mirabile tantopere est re,
> Si genus humanum, cui vox et lingua vigeret,
> Pro vario sensu varia res voce notaret,
> Cum pecudes mutae, cum denique saecla ferarum
> Dissimiles soleant voces variasque ciere,
> Cum metus aut dolor est, et cum jam gaudia gliscunt. . . .
> Ergo, si varii sensus animalia cogunt,
> Muta tamen cum sint, varias emittere voces,
> Quanto mortalis magis aequum est tum potuisse
> Dissimiles alia atque alia res voce notare.

Yet I think that those ancient philosophers who, like Plato, declared the origin of language as simply incomprehensible to them, must have pondered more deeply on the nature of language and thought than even Lucretius, though they might have shrunk from the admission to which Plato is driven in the Kratylos, that words could not have been originally imposed on things except by a superhuman power.

But even after having traced back some at least of the material elements of language to interjections

and imitations, people ought not to imagine for one moment that they have thus accounted for the real elements of language. We may account for the materials of many things, without thereby accounting for the function which they perform. If we were to take a number of flints, more or less carefully chipped and shaped and sharpened, and were to say that these flints are just the same as other flints found by thousands in fields and quarries, this would be about as true as to assert that the materials of language are the same as the cries of animals or, it may be, the sounds of bells. And if I were to say that apes had been seen to use flints[1], that they could not have helped discovering that sharp-edged flints were the most effective, and would therefore have either made a selection of them or tried to imitate them, that is to say, to give to raw flints a sharp edge—that therefore the presence of highly-finished flints does in no way prove the presence of man—what would antiquaries say to such heresies? And yet to say that no traces of human workmanship can be discovered in these flints[2], that they in nowise prove the early existence of man, or that there is no insuperable objection to the belief that these flints were made by apes, cannot sound half so incongruous to them as to be told that the first grammatical edge might have been imparted to our words by some lower animals, or that, the materials of language being given, everything else, from the neighing of a horse to the lyric poetry of Goethe, was a mere question of development.

[1] 'The Pavians in Eastern Africa.' See Caspari, Urgeschichte, vol. i. p. 244.

[2] See Whitley's Researches on Flints near Spiennes, in Belgium.

'Language,' I said many years ago in my Lectures[1] on the Science of Language (1861), 'is our Rubicon, and no brute will dare to cross it.' Language the Rubicon.

It might seem indeed as if in the concessions which I have made, I had myself done all that could well be done to help the brute across the river, by showing on different occasions how easy is the transition from sensuous vibrations to concepts, from shouts to roots. An attempt to minimise a difference is often supposed to arise from a wish to remove it. A clever pleader might say, 'Why, does not the very theory you propose on the origin of roots prove that Darwin is right? Have you not shown yourself that animals possess the materials of language in interjections; that they imitate the cries of other animals; that they communicate with each other, and give warnings by shrill cries; that they know their own names, and understand the commands of their masters? Have you not blessed us altogether by showing how in some cases at least interjections and imitations can be filed down, lose their sharp corners, become general, become, in fact, roots? Surely, after this, Darwin will be justified more than ever in saying that the language of man is the result of mere development, and that there must have been one or several generations of mere animals who had not yet generalised their intuitions and not yet filed down the sharp corners of their interjections?'

Few philosophers have studied animals so closely, and expressed their love and admiration for them so strongly, as Schopenhauer. Schopenhauer on animals.

'Those,' he says in one place, 'who deny understanding to the higher animals, can have very little

[1] Vol. i. p. 403.

themselves.' 'It is true,' he says elsewhere, 'that animals cannot speak and laugh. But the dog, the only real friend of man, has something analogous—his own peculiar, expressive, good-natured, and thoroughly honest wagging of the tail. How far better is this natural greeting than the bows and scrapings and grinnings of men! How much does it surpass in sincerity, for the present at least, all other assurances of friendship and devotion! How could we endure the endless deceits, tricks, and frauds of men, if there were not dogs into whose honest faces we may look without mistrust!' The same philosopher assigns to animals both memory and imagination (Phantasie). He quotes the case of a puppy, unwilling to jump from a table, as a proof that the category of causality belongs to animals also. But with all this he is far too expert a philosopher to allow himself to be carried away by fanciful interpretations of doubtful appearances into ignoring the barrier which separates all animals from the animal homo. When explaining the formation of general concepts as the peculiar work of reason, he states without any hesitation or qualification, 'that it is this function of forming general concepts which explains all the facts that distinguish the life of men from the life of animals[1].'

We have now to see in what this function of forming general concepts really consists, and if the conclusions which we arrived at in our first chapter be right, there is but one way which can lead us to a solution of this problem, namely to study the growth of thought in the history of language.

[1] Schopenhauer, Welt als Wille und Vorstellung, 3 ed., i. 7. 46; ii. 72.

CHAPTER V.

THE CONSTITUENT ELEMENTS OF LANGUAGE.

I TRIED to prove in the first chapter that the whole of what we call the human mind is realised in language, and in language only. Our next task would have been to try to discover the constituent elements of language, and watch in their development the true historical development of the human mind. But before we could safely approach this task, it seemed necessary to remove a preliminary objection which arose from the theory of evolution, as interpreted by Darwin and some of his followers, namely, that as man was the descendant of an animal, the human mind could not differ in kind from the animal mind, and language therefore could only be a higher evolution of those sounds which animals utter, such as the roaring of lions, the barking of dogs, or the singing of birds.

Having shown, as I hope, in Chapters ii and iv, that the theory of evolution, as held by Darwin himself, does by no means necessitate the historical descent of the animal man from some other kind of animal, we now find ourselves free to undertake the analysis of language without any limitations as to the elements we ought to look for, and we therefore proceed to our task without any let or hindrance. If we should find that the ultimate elements in our

analysis of language turn out to be the cries of animals, more or less successfully imitated by men, or something like the sounds which men utter themselves when suffering from pain or joy or any other powerful emotion, this would prove a strong support of the opinion of certain followers of Darwin, stronger than any, I should venture to say, which has been produced by themselves. If on the contrary our analysis should lead us to a different result, we know at all events that our rear is safe, and we need no longer fear that the supposed descent of man from some other animal can again be appealed to as proving, without any further arguments, the utter futility of our researches.

The Residua.

When we analyse any language and separate all that is merely formal in words, we always arrive in the end at certain residua, which resist further analysis. It matters little how we call these stubborn residua, whether roots, or elements, or phonetic types. What is important is the fact that, after we have removed the whole crust of historical growth, when we have broken up every compound, and separated every suffix, prefix, or infix, there remain certain simple substances which will yield to no solvent. This applies not only to the Aryan, but to the Semitic and Turanian languages likewise, nay, to every language which does not consist of roots only, such as the ancient Chinese. These simple substances being granted, we can understand the whole structure of language, we can make again the language which we have unmade. It was this simple process of etymological analysis and synthesis which I tried to represent in as clear a light as possible in my Lectures on the Science of Language, first published in 1861.

Those who have read these lectures will remember how strongly I opposed any attempt on the part of the students of language to go beyond roots, such as we actually find them at the end of a most careful analysis. It was thought at the time that my protests against all attempts either to go beyond roots or to ignore them as the types from which all words must be derived were too vehement. But I believe it is now generally admitted, even by some of my former opponents, that the slightest concession to what, not ironically, but simply descriptively, I called the Bow-wow and Pooh-pooh theories in the etymological analysis of words, would have been utter ruin to the character of the Science of Language. It is pleasant to find, as one grows older, how certain dangerous tendencies, which one had to oppose with all one's might, simply vanish and are seen no more.

Roots ultimate elements in the Science of Language.

These roots of language have often been compared to cells, the last elements of all organic beings. Whatever differences of opinion there may be between different schools of physiologists, this one result seems permanently established, that the primary elements of all living organisms are the simple cells, so that the problem of creation has assumed a new form, and has become the problem of the origin and nature of these cells.

Roots and Cells.

So far there is a certain similarity between the discoveries of physiologists and philologists. The most important result which has been obtained by a truly scientific study of language is this, that, after accounting for all that is purely formal as the result of juxtaposition, agglutination, and inflection, there remain in the end certain simple elements of human

speech—phonetic cells—commonly called roots. In place, therefore, of the old question of the origin of language, we have now to deal with the new question of the origin of roots.

Polygenetic and Monogenetic Schools.

Here, however, the analogy between the two sciences, in their solution of the highest problems, comes to an end. There are, indeed, two schools of physiologists, the polygenetic and the monogenetic, the former admitting from the beginning a variety of primitive cells, the latter postulating but one cell, as the source of all being. But it is clear that the monogenetic school is becoming more and more powerful. Darwin, as we saw, was satisfied with admitting four or five beginnings for plants, and the same number for animals. But his most ardent disciple, Professor Haeckel, treats his master's hesitation on this point with ill-disguised contempt. One little cell is all that he wants to explain the Universe, and he boldly claims for his primordial Moneres, the ancestor of plants and animals and men, a self-generating power, the so-called generatio spontanea or aequivoca.

Roots identical in form, but different in power.

It seems to me that the students of language have given to the problem of the origin of language a far more exact and scientific form. As long as they deal with what may be called the Biology of language, as long as they simply wish to explain the actual phenomena of spoken dialects all over the world, scholars are satisfied with treating the variety of living cells, or the significant roots of language, as ultimate facts. These roots are what remains in the crucible after the most careful analysis of human language, and there is

nothing to lead us on to search for one primordial root, or for a small number of uniform roots, except the mediaeval idea that Nature loves simplicity. There was a time when scholars imagined they could derive a language from nine roots, or even from one; but these attempts were purely ephemeral[1]. At present we know that, though the number of roots may have been unlimited, the number of those which remain as the actual feeders of each family of language is very small, and, according to Pott, amounts probably on an average to no more than about one thousand.

Some of these roots are, no doubt, secondary and tertiary formations, and may be reduced to a smaller number of primary forms. But here, too, philological research seems to me to show far more deference to the commandments of true philosophy than the prevalent physiological speculations. While the leading physiologists are striving to reduce all variety to uniformity, the student of language, in his treatment of roots, often distinguishes where, to all outward appearance, there is no perceptible difference whatsoever. If in the same language or in the same cluster of languages there are roots of exactly the same sound, but different in their later development, a separate existence and an independent origin are allowed to each. There is, for instance, in the Aryan family the well-known root DÂ. From it we have Sk. dădāmi, I give; Greek, δίδωμι; Lat. do; Old Slavonic, da-mĭ; Lithuanian, dû-mi[2]; and an endless variety of derivatives, such as dônum, a gift; French, don-

[1] Lectures on the Science of Language, vol. i. p. 44.

[2] Pott, Etymologische Forschungen, 2nd edit., 1867, p. 105.

ner, to give, pardonner, to forgive; Latin, trado, to give over; Greek, προδίδωμι, to surrender; then Italian, tradire; French, trahir, trahison; English, treason; Latin, reddo, to give back; the French, rendre, with all its derivatives, extending as far as rente and rentier. Another derivative of DÂ, to give, is dôs, dôtis, a giver, in which sense it occurs at the end of sacer-dôs; and dôs, dôtis, what is given to the bride, the English dower (the French douaire), which comes from the French douer, dotare, to endow; a dowager being a widow possessed of a dowry.

It would require many pages to exhaust the list of words derived from this one root DÂ, to give. But what I wish to point out is this, that by the side of this root DÂ there is another root DÂ, exactly the same in all outward appearance, consisting of D+Â, and yet totally distinct from the former. While from the former we have in Sanskrit dâ-trám, a gift, we have from the latter dâ-tram, a sickle. The meaning of the second root is to cut, to carve; from it Greek δαίω, and δαίομαι, δαιτρός, a man who carves. The accent remains in Sanskrit on the radical syllable in dâ-tram, i. e. the cutting (active); whilst it leaves the radical syllable in dâ-trám[1], i. e. what is given (passive).

There are still other roots, in outward appearance identical with these two, yet totally distinct in their potential character; meaning neither to give, nor to

[1] The root DÂ, to cut, has three stems: (1) dâ, from which dâti, he divides; dâná, division of meats, meal; dâtar, mower; dâtram, sickle; avadânam, division; (2) di, from which part. diná and ditá, cut; (3) d, from which dyâmi, I cut, and ávatta, cut off, i. e. ava+tta, ava+d-ta.

cut, but to bind (Sk. dyati, δίδημι, I bind; διάδημα, diadem, what is bound through the hair; δέμα, a band or bundle, κρήδεμνον, from κρᾶς, and δέμνον, head-dress[1]); another, meaning to know, and to teach, preserved in ἀ-δα-ής, ignorant, in the aor. pass. ἐ-δά-ην, in διδάσκω, &c.; and a third, DÂ, to purify, from which dâyamâna, and ava-dâta, pure.

We have the root GAR, meaning to swallow, which yields us the Sanskrit giráti, he swallows, perf. gagâra, the Greek βιβρώσκει, the Latin vorat. Several words which have been mistaken for onomatopœic, such as Sk. gárgara, a whirlpool, Lat. gurges, gurgula, gula, γέργερος, throat (Sk. galgulas), γαργαρίζω, to gargle, are derived from the same source. The root GAR.

We have, secondly, a root GAR, meaning to make a noise, to call, to sing, which yields us in Sanskrit gir-ate, and gri-nâ-ti, βορβορύζειν in Greek, and both garrire and gingrire in Latin. It is conceivable that these two roots may have been originally the same, and that GAR from meaning to swallow may have come to mean the indistinct and disagreeable noise which even now is called swallowing the letters, in Sanskrit grâsa, in German Verschlucken. But a third root GAR, meaning to wake (aor. agîgar), the Greek ἔγειρω, perf. ἐγρήγορα, can hardly be traced back to the same source, but has a right to be treated as a legitimate and independent companion of the other root GAR.

Many instances might be given, more than sufficient to establish the principle, that even in the

[1] In Sanskrit dâman, band, fetter; sam-dita, bound; á-diti, boundless; possibly identical with DÂ, to cut, to shape, to trim.

same language two or more roots may be discovered, identical in all outward appearance, yet totally different from each other in meaning and origin.

Then, why, it may be asked, do students of language distinguish, where students of nature do not? Why are physiologists so anxious to establish the existence of cells, uniform from their beginning, yet—I quote from Professor Haeckel—capable of producing by the processes of monogony, gemmation, polysporogony, and amphigony, the endless variety of living creatures[1]? Students of language, too, might say, like the physiologists, that, in such cases as the root DÂ, 'the difference of mixture in the endless varieties of consonants and vowels are so fine as to be, for the present at least, beyond the powers of human perception.' If they do not follow that siren voice, it is because they hold to a fundamental principle of reasoning, which many evolutionist philosophers neglect, viz. that if two things, be they roots or cells or anything else, which appear to be alike, become different by evolution, their difference need not always be due to outward circumstances (commonly called environment), but may be due to latent dispositions which, in their undeveloped form, are beyond the powers of human perception. If two roots of exactly the same sound produce two totally distinct families of words, we conclude that, though outwardly alike, they are different roots. And if we applied this reasoning to living germs, we should say that, if two germs, though apparently alike, grow, under all circumstances, the one always into an ape,

[1] Haeckel, Natürliche Schöpfungsgeschichte, achte Vorlesung; Strauss, Alter und Neuer Glaube, p. 169.

and never beyond, the other always into a man, and never below, then the two germs, though undistinguishable at first, and though following for a time the same line of embryonic development, are different from the beginning, whatever their beginning may have been.

There is another point of difference between the treatment of cells by physiologists, and the treatment of roots by philologists, which requires careful attention. The physiologist is not satisfied with the admission of his uniform cells, but by subjecting these organic bodies to a new chemical analysis, he arrives in the end at the ordinary chemical substances (the πρῶτα στοιχεῖα of nature), and looks upon these, not simply as ruins, or as the residue of a violent dissolution, but as the elements out of which everything that exists, whether lifeless or living, was really built up. He maintains, in fact, the possibility of inorganic substances combining, under favourable circumstances, so as to form organic substances, and he sees in the lowest Moneres the living proof of an independent beginning of life [1].

Materials and Elements.

In the Science of Language we abstain from such

[1] A further distinction is made between Autogony and Plasmogony. The former is the generation of the most simple organic individuals from an inorganic formative fluid, a fluid which contains the requisite elements for the composition of an organism, dissolved in simple and firm combinations, e.g. carbonic acid, ammoniac, binary salts, etc. The latter is the generation of an organism from an organic formative fluid, a fluid which contains the requisite elements dissolved in complicated and loose combination of compounds of carbon, e.g. white of eggs, fat, etc. (Haeckel, l. c., p. 302.)

experiments, and we do so on principle. We do not expect to discover the origin of living roots by dissolving them into their inorganic or purely phonetic elements; for, although every root may be reduced to at least one consonant and one vowel, these consonants and vowels are simply the materials, but not the elements of language; they have, in fact, no real independent existence, they are nothing but the invention of grammarians, and their combination would only give rise to meaningless sounds, never to significant roots. While the physiologist still entertains a lingering hope that, with the progress of chemical science, it may be possible to produce a living cell out of given materials, we know that roots are simple, that they cannot and should not be decomposed, and that consonants and vowels are lifeless and meaningless materials, out of which no real root ever arose, and out of which, certainly, nothing like a root can ever be reconstructed. The root DÂ, for instance, means, as we saw, to give; dissolve it into D and Â, and you have meaningless slag and scum. Recompose D and Â, and you have indeed the same sound, but its life and meaning are gone, and no language could, by its own free choice, accept such an artificial compound into its grammar or dictionary.

Such are some of the coincidences and some of the differences between Biology and Philology in their attempts to solve the problems of the origin of life and the origin of language; and the question does now arise, Are we, in the Science of Language, driven to admit that roots, because they yield to no further analysis, are therefore to be accepted as unintelligible in their origin, as miraculously implanted in man,

but not in other animals, or may we hope to be able to go beyond this limit, and discover something which, while it makes the origin of roots perfectly intelligible in man, explains to us, at the same time, why they could never have arisen in any other animal.

What roots are not.

Let us see first of all what roots are not. Roots are not either interjections or imitations of natural sounds. Interjections such as pooh, and imitations such as bow-wow, are the very opposite of roots. And why? Because roots are definite in sound, but general in meaning: while interjections and imitations are general, that is vague and varying in sound, but definite or singular in meaning.

Difficulty of rendering natural sounds by articulate words.

Nothing seems so easy, yet nothing is in reality so difficult as to represent either the sounds by which our own feelings manifest themselves, or natural sounds such as the notes of birds, the howling of the wind, the falling of a stone, by articulate imitations[1]. From the very beginning the attempt to do this would have given rise to an infinite variety of sounds, many of which it would be almost impossible to recognise or understand. Even in our time and amongst civilised nations with languages fixed by a tradition of thousands of years, the phonetic expressions of the most ordinary feelings vary considerably. The Frenchman, as an observant traveller (the late Baron M. von Weber) has remarked, expresses surprise by Ah!,

[1] This was remarked already by the grammarian Diomedes (lib. ii. p. 80 a, ed. Colon. 1536–8) who says: 'Vox confusa est irrationalis vel inscriptibilis, simplicis vocis sono animalium effecta, quae scribi non potest, ut est equi hinnitus, tauri mugitus.'

the Englishman by Oh!, the German by Ih! The Frenchman says, Ah, c'est magnifique; the Englishman, Oh, that is capital; the German, Ih, das ist ja prächtig. Nor do these interjections express exactly the same feeling; they all express surprise, no doubt, but the surprise peculiar to each of these three national characters. The surprise of the Frenchman is simple and open; in saying Ah, he is all agape, il est ébahi. The surprise of the Englishman is restrained and deep; in saying Oh! he swallows half of his admiration. The surprise of the German is high and sharp, in saying Ih, he almost chirps with delight.

In Chinese surprise is expressed by hu and fu, applause by tsai, misery by i, contempt by as, pain by uhu.

Frequently it is as difficult to define the exact sound as the exact meaning of these interjections, so that in Ciconio's Italian Grammar no less than twenty significations are ascribed to the interjections ah! ah! With a little imagination quite as many and even more meanings might be detected in the English Ah!

Have consonants or vowels an inherent significance?

Some ancient philosophers, beginning with Plato in his Kratylos, and some very recent scholars too, have brought themselves to imagine that there is some hidden connection between certain letters, consonants and vowels, and certain meanings. Who can doubt, they say, that in German, for instance, such words as Wanken, wälzen, weben, wehen, Walle, Woge, winden, etc., all beginning with w, express the idea of a slow movement, while words beginning with st, such as Stab, Stamm, starr, stehen, Stein, Stock,

convey the idea of rest or resistance? This subject, though full of pitfalls, is most interesting, and, if cleverly handled, not without a certain plausibility; nay, if we enter more deeply into it, not without a certain truth. Only we must not allow ourselves to imagine that consonants and vowels by themselves can ever convey any meaning, for the simple reason that neither vowels nor consonants had ever any independent existence in language [1]. To take, for instance, the roots GÂ, to sing, DÂ, to give, and VÂ, to blow, and to ask why the three consonants g, d, v should produce such difference of meaning, is absurd and can never lead to any results. These consonants, though they look very real when we learn our A, B, C, are mere abstractions. They have no existence by themselves, and cannot therefore possess any meaning by themselves, or produce by themselves any effect whatsoever. If there is some truth in the observations made by many scholars, from Plato down to Humboldt, that certain meanings are connected with certain consonants and vowels, and I have no doubt there is, we shall see that this must be explained in a very different way. For scientific purposes all observations of the supposed inherent meaning of letters have hitherto proved not only useless, but very mischievous. If only extended over a sufficiently wide field of language, they generally neutralise themselves. Who

[1] The error that letters existed first, afterwards syllables, afterwards words, and afterwards sentences, is a very old error. Aristotle often compares the στοιχεῖα, i. e. letters, with the elements of things, and calls the στοιχεῖον, the letter, the πρότερον τῆς συλλάβης (Top. vi. 4), as he calls the point the πρότερον of the line, the line the πρότερον of the plane, the plane the πρότερον of a body.

does not imagine, for instance, that there is, as Humboldt says, some hidden connection between the letter N and the concept of negation; yet, as a matter of fact, there are languages, for instance Syrianian, in which No means Yes.

Uncertainty in imitating the sounds of animals.

This uncertainty becomes still more startling when we examine the way in which the sounds uttered by animals are imitated by different languages. I will give a few specimens from Chinese. Who would guess that the sound kiao kiao was meant for the cry of the cock, kao kao for that of the wild goose? that siao siao is supposed to represent the sound of rain and wind, lin lin of a rolling carriage, tsiang tsiang of chains, kan kan of drums?

This subject is in reality endless, and having collected a vast quantity of material from numerous languages, I may say with a good conscience that any attempt to derive from such vague and constantly varying sounds the words of any language is utterly hopeless[1].

In German the sound uttered by the thrush is imitated by sir-sir. It is called zärren, zärrezen, schnarren, schnerren; in Latin, cucillare, trutilare, truculare, faccilare, soccitare; in Greek, κιχλίζειν, κιχλάζειν, etc. There is no trace of any of these sounds in the words Drossel, or thrush, A. S. thrysce, and throstle, A. S. throstle. There may be onomatopœia in such names as Zärrer, Schnarre, Schnerre, Schnarr-drossel, but not in Drossel, nor in turdus.

The call of the duck is represented by quak

[1] G. Hunfalvy, Reise in die Ostsee-provinzen, p. 196, Lied des Vanemuine.

quak, in other places, through the influence of what Comparative Philologists would call labialism, by pak pak. Verbs applied to this sound are quacken, platzen, schnattern in German, tetrinire, tritinnire, tetrinnire, tetrissare, teretissare, tetrissitare, tetrisitare, tetrilitare in Latin. A duck is called dill, or dilly, dilly, but in its recognised names, such as Latin anas, anatis, *νῆσσα*, O.H.G. anut, or querquedula, *κερκουρίς*, a peculiar kind of duck, is there any trace of these onomatopoetic sounds?

The shout of the owl in Latin is tu tu, from which a verb tutubare (Plaut. Menaechm. iv. 2. 90); in Greek *κικκαβαῦ* (Arist. Av. 262), from which a noun *κικκάβη*, and a verb *κικκαβίζειν*; in German by uhu uhu, huhuhu, schuhu hu hu, pu pu, but neither *γλαῦξ* nor owl can be derived from any such sounds. We have in German such popular names as Puvogel, for owl, and Uhu, Schuhu and Schufut for horn-owl, and Latin bubo (O.H.G. bûf) may likewise seem to come direct from the actual sound uttered by the owl. Still we ought to consider the Greek *βύας* (for which Bekker, Arist. H. A. 8. 3. 2, reads *βρύας*), which indicates the existence of an intermediate verbal root. Thus we find *βύας ἔβυξε* (Dio Cass. 56, 29; 72, 24), and there is *βύζειν* used in the sense of hooting. Grimm treats Eule, O.H.G. iuwila, O.N. ugla, A.S. eovle, as a feminine, derived from the masculine ûwo, uhu, horn-owl; yet, strange to say, he appeals to the forms hûvo, hûo, hiuwila in order to derive all these words from the verb hiuwilôn, heulen, to howl. In Latin too, there is ulula, screech-owl, and ululare, and it is difficult not to connect with these words the Sanskrit ulûla,

Lat. ŭlŭcus, owl, and Sk. ulŭli, and ulûlu, howling. The verbs used for expressing the sounds of owls are κικκαβίζειν, κικκαβάζειν, κακκαβίζειν, κακκαβάζειν, κακκιβάζειν, and κακιβάζειν in Greek; bubulare, bubilare, cucubare (noctua), cucubire, gemere, garrire, stridere (strix), and ululare (ulula) in Latin; wixen, säusen, hauren, tuten in German.

The Germans suppose that the frog says quak or kik, the Greeks βρεκεκὲξ κοὰξ κοάξ, but neither frosch nor βάτραχος betrays any relationship with these sounds. The German goose says gagaga, giga, gick gack, dadada, drussla drussla; the wild goose in Chinese says kao kao, in Mongolian kôr kôr. The Greeks have a verb πλαταγίζειν, the Romans use clangere, clingere, gingrire, griare, crincire, trinsire, trinnire, gracitare, craccitare, the Germans gaken, schnattern, schnadern, dadern, bladern, quiteln, all meant to imitate the cry of geese, but the names for goose stand again perfectly apart.

Lastly, the call of the cock is kikerriki in German, kiao kiao in Chinese, dchor dchor in Mongolian, cock-a-doodle-doo in English, κόκκυ, to judge from κοκκυβόας and κοκκύζειν, in Greek; and who shall say which is the most faithful rendering? But none of them has supplied real names for cock, nor any of the verbs applied to his song, such as ἄδειν, κλάζειν in Greek, canere, cucurrire in Latin, hrukjan in Gothic, chrâan in O.H.G., kürlücken in Low German, schreien, quiteln, grisgramen in High German.

Sometimes the same animal is supposed to utter different notes as it is occupied in different pursuits. If not otherwise engaged, the hen in German is supposed to say gack gack; but if she is laying

eggs, she says glu glu glu; when calling her chicks, tuck tuck tuck. And yet when she is called herself, she is addressed by putt putt putt, and her chicks by bi bi bi.

The dog also says not only wau wau or bau bau, but also hu hu, and kliff klaff. When very angry and growling he says R, which the Romans therefore called the dog letter, the litera canina.

Before leaving this subject, which is really endless, I shall add only one more German phonograph, the full picture of the song of the nightingale. It is Zucküt zicküt, zicküt! Zidiwik, zidiwik, zidiwik! Zifizigo, zifizigo, zifizigo! titidon zi zi! Tantaradei! A great phonetic artist, however, not satisfied with these popular representations of the note of the nightingale, devoted many days and nights to a careful study of the subject, the result of which was that the nightingale really sings[1]:—

Deilidurei faledirannurei lidundei faledaritturei.

[1] There is a large literature on the voices of animals, of which I shall only mention a few specimens:—

Wackernagel, Voces Variae Animantium, Basel, 1867.

De Vocibus Animatium, in Heinrich Meyer, Anthologia veterum Latin. Epigrammatum, i. 2, 66 seq.

Aldhelm, De Septenario et Re Grammatica, in Classicorum auctorum cur. Ang. Mai, tom. v. p. 569; ibid. tom. v. p. lii.

Papias, Vocabulista, Venedig, 1496, s. v. Vox.

Junius, MS. Oxon.; cf. Nyerup, Symbolae, Sp. 332 seq.

Juventini Elegia de Philomela, Wernsdorf, Poet. Lat. min., ii. 2, 388.

Varro, De Lingua Latina, vii. 103–104.

Ammonius, De differentia affinium vocabulorum, s. v. φωνεῖν; Valckenaer, Animadversiones ad Ammonium, iii. 18.

Aelianus, De Natura Animalium, v. 51.

Reifferscheid, in his edition of Suetonius, 1860, p. 247, De Naturis Animantium, with extracts from various sources.

Communication, not Language.

That some kind of communication is possible by means of such imitations of sound coupled with interjections or emotional expressions, is evident. In order to convey the information that a certain dog is harmless we might say, Bow wow, pooh! But communication is not language, as little as cries are roots. No tribe, however low, has yet been met with employing no more than such utterances, though on the other hand no nation, however advanced in culture, dispenses entirely with such aids of communication. Interjections have secured to themselves the last chapter in every grammar, and it has been supposed that the clicks of the Hottentots may have to be explained as remnants of interjections which have found an entrance into the very body of human speech. Imitations of the sounds uttered by animals or other natural objects have kept their place and will probably always keep it in the language of children, and their language, as we know, is not without its influence on the language of nurses and parents. By whatever names a sheep, a dog, a cock, a cow, or a cat may be called in any language, there is no doubt that a child will call them something like Bah, Bow-wow, cock-a-doodle-doo, Moo, and Miau; and it is but natural that more especially those who think that they can study in the child the mental state of the primitive savage, should imagine that this parler enfantin explains the origin of all language.

True meaning of ὀνοματοποιία.

We are even told by scholars, who ought to know better, that the wisest of the Greeks took the same view, and looked upon their imitative words as the roots of all human speech. No doubt the Greeks called this process

ὀνοματοποιΐα, the making of words, but they did this in order to distinguish the process of manufacturing artificial words from the original creation of words which they tried to explain in a very different way, namely, either φύσει or θέσει, by nature or by law[1].

Kant who has not said much about language, has at all events kept clear from the rock of onomatopoiia, on which so many philosophers before and after him have been wrecked. 'It is not the hearing,' he says, 'which gives us the forms of objects, and the sounds of language do not lead directly to the reproduction of them. But for that very reason, because these sounds signify nothing by themselves, certainly not objects, though perhaps internal sensa-

[1] That the Greeks used the word ὀνοματοποιΐα in the sense of an artificial making of words, in opposition to the natural processes to which they ascribed the origin of language in general, is perfectly clear. Thus Dionysius Thrax (Ars gram. c. 14. p. 31, tom. vii. Biblioth. Gr. Fabric. vol. vi. p. 315, ed. Harles) in Bekkeri Anecd. Graec. vol. ii. p. 637, 18–20, says: πεποιημένον δέ ἐστι τὸ παρὰ τὰς τῶν ἤχων ἰδιότητας μιμητικῶς εἰρημένον, οἷον φλοῖσβος, ῥοῖζος, ὀρυμαγδός. Strabo takes the same view, and says that the Greeks were particularly clever in imitating sounds by similar sounds, so that there is in Greek an abundance of such ὀνοματοποιΐαι, as for instance, κελαρύζειν, to bubble, κλαγγή, a twang, ψόφος, a noise, βοή, a shout, κρότος, a rattling, most of which are used already in their proper meaning. However wrong he may be in taking these words as direct imitations of actual sounds, he shows quite clearly that he means by ὀνοματοποιΐα the process of forming artificial words by imitation of sounds. These words are classed by themselves as πεποιημένα (Pseudo-Demetrius Phalareus, Περὶ ἑρμηνείας, § 220), that is, factitious words, made in imitation either of a πάθος or a πρᾶγμα. Priscianus (De octo part. lib. ii. p. 53, ed. Bas. 1554-8, p. 77, ed. Krehl) distinctly translates πεποιημένον by factitium, quod a proprietate sonorum per imitationem factum est, ut tintinnabulum, turtur.

tions, they form the most useful instruments for indicating concepts [1].'

That in a few cases, and, in certain languages, in many cases too, the names of birds and animals have been derived from sounds which they utter, no one can doubt. What I have always maintained is, that this inorganic layer of words hardly concerns the philologist and requires no explanation at his hands, while the real problem of the Science of Language lies in such words as ovis for sheep, canis for dog, gallus for cock, vacca for cow, felis for cat. I go even a step further, and I have tried on several occasions to show, that as from a proper name, such as Sokrates, we can form a kind of appellative, a Sokrates, in the sense of a wise man, so some of these interjections and imitative sounds too may well have been raised from time to time into the sphere of conceptual thought and language [2]. But all this ought not to blind us, or lead us to imagine that this conceptional process can account for the origin and growth of real language. We may call such interjections and imitations language, if we like, as we may speak of the language of the eyes, or even of the eloquence of mute nature, but we must not mistake metaphor for matter of fact.

Emotional and Rational Language.

If people insist on calling every kind of communication language, nothing remains but to distinguish once for all between Emotional and Rational language, a distinction so curiously confirmed by physiological

[1] Kant, Pragmatische Anthropologie, p. 49.

[2] For examples see Lectures on the Science of Language, vol. i. p. 411.

experiments lately instituted by Dr. Jackson, Gairdner, and others, that it may be useful to give a short account of them at this stage of our argument.

The power of showing by outward signs what we feel, or it may be, what we will, is the source of emotional language, and the recognition of such emotional signs, or the understanding of their purport, is the result of memory, a resuscitation, in fact, of painful or pleasant impressions connected with such signs. We may admit that this emotional language is shared in common by man and beast. If a dog barks, that may be a sign, according to circumstances, of his being angry or pleased or surprised. Those who know dogs, know how different their barks are when they wish to express anger or joy, anxiety or surprise. Every dog speaks that language, every dog understands it; and other animals too, such as cats or sheep, and even children, learn it. A cat that has once been frightened or bitten by a barking dog, will easily understand the sound, and run away, like any other so-called rational animal. The spitting of a cat, again, is a sign of anger, and a dog that has once had his eyes scratched by a hissing cat would not be slow to understand that feline dialect, whenever he hears it in too close proximity. The purring of a cat has a very different meaning, and it may be, as we have been told, like the murmuring of a mother to her beloved child. The subject of the emotional language both of animals and man is endless, and I gladly leave it to the abler pen of one who was both a poet and a philosopher [1].

[1] See Darwin, Descent, vol. i. pp. 53 seq.

What then is the difference between emotional and rational language? The very name ought to show the difference. Language, such as we speak, is derived from roots, and roots are expressive of concepts, and concepts are the work of reason, reason being neither more nor less than the faculty, or if we dislike that word, the act of forming and handling concepts. If therefore we call animals irrational, we do not mean to deny them every possible gift, whether observation, or shrewdness, calculation, presence of mind, weighing, judging, deciding, nay, even refined taste or genius, but only the power of forming and handling concepts which is manifested in language, and in language only.

I know that this distinction has been considered fanciful and artificial, yet no one has as yet shaken the fact that no animal speaks, nor controverted the consequences which that fact involves.

It is fortunate, however, that physiological observations have been made which confirm in the strongest and most unexpected manner the conclusions at which the students of the Science of Language had arrived in their own way. Dr. Hughlings Jackson in some articles published in the Medical Times and Gazette for December 14 and 21, 1867, speaking of the disease of a particular part of the brain, says:—

'This disease may produce partial or complete defect of intellectual language, and not cause corresponding defect of emotional or interjectional language. The typical patient in this disease misuses words or cannot use words at all to express his thoughts; nor can he express his thoughts by writing, or by any signs sufficiently elaborate to serve instead of vocal or written words; nor can he read books for himself. But he can smile, laugh, cry, sing, and employ rudimentary signs of gesticulation.

So far as these means of communication serve, therefore, he is able to exhibit his feelings to those around him. He can copy writing placed before him, and, even without the aid of a copy, sign his own name. He understands what is said to him, is capable of being interested in books which are read to him, and remembers incidents and tales. Sometimes he is able to utter a word or words, which he cannot vary, and which he must utter if he speaks at all, no matter on what occasion. When excited he can swear, and even use elaborate formulas of swearing[1] (as for example, "God bless my life"), which has come by habit to be of only interjectional value[2]. But he cannot repeat such words and phrases at his own wish or at the desire of others. And as he is able to copy writing, so he can, when circumstances dictate, as it were to him, give utterance to phrases of more special applicability. Thus, a child being in danger of falling, one speechless patient, a woman, was surprised into exclaiming, "Take care!" But in this, as in every other case, the patient remains perfectly incompetent to repeat at pleasure the phrase he has just used so appropriately, and has so distinctly uttered. . . . It would seem that the part of the brain affected in such cases is that which is susceptible of education to language, and which has been after the birth of the patient so educated[3]. The effect of the disease in relation to speech is to leave the patient as if he had never been educated at all to language, and had been born *without* the power of being so educated. The disease in question is an affection of but one side of the brain.'

And again :—

'Disease of a particular region of the left cerebral hemisphere is followed by a complete or partial loss of power in the naming process, and by consequent inability to speak, even when all the

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[1] Cf. Dr. Gairdner, The Function of Articulate Speech, 1866, p. 17.

[2] In another paper Dr. Hughlings Jackson describes an oath extremely well as 'a phrase which emotion has filched from the intellect.'

[3] See also Dr. Bateman's Lecture on 'Darwinism tested by recent researches in language,' Journal of the Victoria Institute, March 12, 1872.

machinery of voice and articulation recognised in anatomy remains unchanged.'

This subject has likewise been treated in Dr. Bateman's book on Aphasia, and though one may feel doubtful as to the minute conclusions which Dr. Broca has drawn from his own experiments on different portions of the brain, so much seems to me firmly established, that if a certain portion of the brain on the left side of the anterior lobe happens to be affected by disease, the patient becomes unable to use rational language: while, unless some other mental disease is added to aphasia, he retains the faculty of emotional language, and of communicating with others by means of signs and gestures.

In referring to these experiments and observations, I hope I shall not be suspected of admitting that the brain, or any part of the brain secretes rational language, as the liver secretes bile. My only object was to show that the distinction between emotional and rational language is not artificial or of a purely logical character, but confirmed by palpable evidence in the pathological affections of the brain. No man of any philosophical culture will look on the brain, or that portion of the brain which interferes with rational language, as the seat of the faculty of speech, as little as we place the faculty of seeing in the eye, or the faculty of hearing in the ear. That without which anything is impossible is not necessarily that by which it is possible. We cannot see without the eye, or hear without the ear; perhaps, we might say, we cannot speak without the third convolution of the left anterior lobe of the brain; but neither can the eye see, or the ear hear, or the third convolution of the left anterior lobe of the brain speak without the

co-operation of many other things, and without the will of what we call our self. To look for the faculty of speech in the brain would, in fact, be hardly less Homeric than to look for the soul in the midriff.

Mischief to Scholarship.

The greatest mischief, however, which the onomatopœic theory of language has caused, lies not within the sphere of logic, but in that of scholarship, and it is from scholars, therefore, that hitherto the loudest protests against it have proceeded. Comparative Philology has always prided itself on the strict observance of phonetic laws. Every vowel and every consonant, after it had once been fixed in any given root, was shown to extend its sway over the latest offshoots. Long treatises were written to show that θεός[1] could not be derived from the same root which gave rise to deus, because the root DIV was without aspiration in its initial consonant. In spite of popular incredulity, day was separated from dies, care from cura, have from habeo, call from καλεῖν, doom from damnare. It was not likely therefore that a school which attempted to derive words in Greek, and Latin, and English straight from such indefinite sounds as pu, bu, or fu, expressive of contempt, should find much mercy with the pupils of Bopp.

I do not in the least deny that some scholars who believe that interjections and imitations are the real roots of language have given proof of wide reading and considerable ingenuity. But neither the one nor the other is of any avail unless supported by an implicit faith in phonetic laws. We must distinguish at

[1] M. M., Selected Essays, vol. i. pp. 215, 459.

least four roots in Sanskrit, PÛY, to stink, PÎY, to hate, BHÎ, to fear, SH*THÎ*V, to spue, in order to account for the origin of such words as—

(1) Pus, puteo, πύον, πύθω, Gothic fûls, etc.

(2) Gothic fijan, to hate, fijands, fiend; faian, to blame, etc.

(3) Sk. bhîh, fear, bhîma, fearful, φέβομαι, φόβος, etc.[1]

(4) Gothic speiva, Lat. spuo, pitu-ita, πτύω, πυτίζω, ψύττω[2].

These derivations are by no means free from phonetic difficulties, but any one who will consult Curtius will see that those difficulties have at all events not been ignored, but faced and explained, as far as possible. To the believer in the interjectional origin of language, however, no such difficulties exist, everything seems easy and plausible, and those who venture to doubt are declared to be pedantic believers in phonetic laws which they themselves have set up. We are told that *f* is the natural sound expressive of contempt, because we make it in drawing in pleasant scents and blowing away unpleasant ones. In English this sound of contempt is expressed by piff, phew, phit, and all over the world by fu, pu, whew. Thus we are rid at once of all difficulties created by Grimm's Law. We can explain the Dutch pusen, pusten, phausen quite as well as the Greek φυσάω, ποιφύσσω, Latin pûsula and pustula, also spuo and spuma. Nor is there any doubt that the Finnish puhhata, puhkia, the Sandwichian puhi, Maori puhipuhi and pupuhi, Quichua puhuni, Zulu

[1] Curtius, Grundzüge, p. 298.

[2] For further derivations see Curtius, pp. 286, 298.

pupuza, Malay puput, Sk. phûtkara, puffing, hissing, pupphusa (πυι-φύσαω), lungs, the Maori púka, to snort, and púka-púka, lungs, all come from the same inexhaustible source. If we have once admitted all this, we cannot resist the conclusion that Sk. PÛY, to decay, to stink, meant originally to say fie, and thus led on to Lat. pŭteo, putresco, pus, to foetidus, Gothic fuls, foul, etc. Nay, we are asked why the auxiliary verb BHÛ, to be, should not belong to the same kith and kin, as it might have meant originally to puff, then to breathe, then to live, then to be. Again, as the French say 'faire fi d'une chose,' why should not pudet me have meant originally 'it poohs me,' and pudeo 'I pooh,' and if so, why should not repudio, 'I pooh towards a thing,' and refuto, 'I pooh away,' be referred to the same source?

These are no inventions of my own or even exaggerations, nay, what is the worst of it, there is in all of this a considerable element of truth, if only it were disentangled from the surrounding slags. I do not mean to say that repudiare did ever mean 'to say fi.' If tripudiare, 'to beat the ground with the feet, to dance,' is connected with pedum and pes[1], repudiare can hardly be separated from it, and must have meant originally to kick away or some similar recalcitrating action. Nor do I mean to imply that refutare ever meant to say fie! If refŭto is derived from an old root FU, Sk. HU, which afterwards took the form fundo, but which in its simplest form FU produced futis, a jug for pouring out, futilis, fit for pouring out, and also fons, source, then

[1] See, however, Cic. Div. ii. 34, 72, and Festus, p. 363.

futare can only have meant to pour, and refutare to pour back; and as fundare is used in the sense of throwing to the ground, refutare also was most likely used in the same sense [1].

But making these and other deductions, which every scholar would make at once, there remains this kernel of truth, that the root PÛY was very likely the residuum of a number of sounds accompanying the acts of primitive men when rejecting something unpleasant and expressing their disgust. This is in fact the form which the theory which I called the Pooh-pooh theory has now assumed with most scholars. Some have openly abandoned it, others have protested that they never held it in its extreme form, and that they would be satisfied with the admission that roots might have some kind of distant connection with interjections and imitations, while the growth of real language should be traced back to these roots. With these admissions students of Comparative Philology will be perfectly satisfied, and no further misunderstanding is likely to arise, if only the observance of the phonetic laws becomes in future, not only a promise, but a fulfilment with our new converts.

But while we may hope that all Bow-wow and Pooh-pooh etymologies will henceforth be banished from etymological and grammatical treatises, we ought to admit on our side that interjections and imitations of natural sounds deserve the serious attention of the philosopher who has to do with the question which now occupies us, namely the origin of roots.

[1] See however Corssen, Aussprache, i. 158.

In the Science of Language, roots, as we saw, are ultimate facts. Their number may be and, I have no doubt, will be more and more reduced, but no primary root can be further analysed by purely philologic methods.

Roots are ultimate facts in the Science of Language, not in the Science of Thought.

It has often been a matter of surprise to me that, whereas in my Lectures on the Science of Language I had done all I could to avoid committing myself to any theory on the origin of language, or rather of roots, I should have been credited for years with one or the other solution of this important problem. I call it an important problem, because I have never been able to share the feeling of some of the most eminent scholars who look upon the various attempts at solving it with ill-concealed contempt, and place it in the same category as the problems of the perpetuum mobile or the squaring of the circle. The less a young scholar knows about languages, it used to be said, the more eloquent will he be on the origin of language, and nothing could be more significant than the resolution passed by an illustrious philological society at Paris, never to admit a paper or allow a discussion on the origin of language.

My own conviction, on the contrary, has always been that the student of the science of language should never, while carrying on his own special researches, lose sight of that problem; that his own special researches should be to him like sign-posts, leading him on and on in the right direction, till the facts accumulated by the patient explorers of the history of language rise on either side like the mountain walls of a valley, narrowing his path more and more, and pointing the way, if not to the very source of the

river, at least to the region from which alone its tributaries can spring.

Grimm and Bopp on the origin of Language.

Grimm waited till he was an old man before he gave a permanent form to his thoughts on the origin of language [1], and if his little book on that subject was by many of his greatest admirers declared to have been disappointing, it is nevertheless of great interest, as marking the highest point that can be reached by that purely historical method which has rendered Grimm's school illustrious.

Bopp never wrote on the origin of language at all, and he seems to me to have been perfectly justified in this. Every scholar has surely the right to draw himself the boundaries of the field which he wishes to cultivate, and nothing seems more unfair than to blame him for not drawing his furrow beyond what he considers his own field. We do not blame the geologist who is satisfied with studying the rocks as he finds them, without entering into the questions of chemistry or crystallography. We allow the formal logician to discuss the forms of thought, without insisting on his pronouncing an opinion on the structure of the nerves or the working of the organs of sense. Many scholars go even so far in their definition of the Science of Language as to exclude from it all consideration of roots. Language with them is a totality of physically perceptible signs of thought, and these signs, their purpose and history, are to them the only subject for the student of linguistic science. I agree with this to a certain point, and I feel convinced that,

[1] 'Über den Ursprung der Sprache,' aus den Abhandlungen der Königlichen Akademie der Wissenschaften vom Jahr 1851.

if any real advance is to be made in the conquest of truth, there must be division of labour. No one who watches the historical growth of any science can fail to see that the most valuable contributions to the stock of human knowledge have been made by those who were content to cultivate a small field, but who cultivated it thoroughly. Bopp was satisfied with tracing the whole body of languages back to roots, and distinctly declined to go beyond. These roots were to him ultimate facts. His patient analysis of words led him thus far, but no farther, and the question how a root DÂ came to mean to give, or a root STÂ to stand, was frankly left by him as a problem beyond his powers.

Why I avoided the problem of the origin of language.

In my Lectures on the Science of Language I purposely followed Bopp's example. Within the limits which I had fixed for myself in those two courses of lectures, the roots, whether Aryan, Semitic, or Turanian, that is to say the elements of language which resist further grammatical analysis, were represented as ultimate facts. From an historical point of view, and with the tools supplied by the analytical method, we can go no further, and we should not attempt to go further.

But to show that a certain road, and the only safe road, leads us to a mountain wall which from our side can never be scaled, is very different from saying that there is and that there can be nothing behind that wall. To judge from the manner in which some philologists speak of roots, one would imagine that they were not only indiscernibilia, but Palladia fallen straight from the sky, utterly incomprehensible in their nature and origin. It was in

order to guard against such a view that, at the end of the first volume of my Lectures on the Science of Language, I felt induced to add a few lines, just as a painter, when he has finished a landscape, dots in a few lines in the background to show that there is a world beyond. The Science of Language, I felt, had done its work, when it had reduced the vague problem of the origin of language to a more definite form, viz. 'What is the origin of roots?' How much has been gained by that change of front those will best be able to appreciate who have studied the innumerable attempts at discovering the origin of language, from the time of the earliest Greek philosophers to the present day. Language was always looked upon as something so dazzling and wonderful, the wealth of words and the unlimited powers of grammar in every language of the world seemed so astounding, that nothing short of a superhuman origin would satisfy the mind of most thinkers. And now if we take one of the richest languages of the past, Sanskrit, we find the number of its real roots reduced to about 850; while for English, one of the richest languages of the present, Professor Skeat is satisfied with 461 Aryan roots to explain the whole native wealth of its dictionary[1], exclusive of about a score of demonstrative elements. Whatever has been said or written in the Vedas, the Bible, or the plays of Shakespeare, all has been achieved by the composition and decomposition of that small number of significative syllables which would fill no more than a page. This surely is a simplification of a problem such as we seldom find in the history of

[1] Etymological Dictionary, p. 746.

philosophy. So much the Science of Language has achieved;—more than this it cannot achieve within its proper limits.

Heyse's view, dating from the school of Oken.

If then the Science of Language cannot carry us beyond the point where the student of language lays the primary elements of speech at the feet of the philosopher, and if the Science of Thought alone can take up the thread that is to lead us further through the labyrinth, it seemed to me but an act of justice to point out in what direction one philosopher at least had made what seemed to me a promising attempt to account for the connection between sound and thought, which is in other words the problem, or at all events, an important part of the problem of the origin of roots. Professor Heyse in his lectures delivered at the University of Berlin, and published after his death by Professor Steinthal, had pointed out that 'there is a law which runs through nearly the whole of nature, that everything which is struck, rings. Each substance has its peculiar ring. We can tell the more and less perfect structure of metals by their vibrations, by the answer which they give. Gold rings differently from tin, wood rings differently from stone; and different sounds are produced according to the nature of each percussion. It may be the same with man, the most highly organised of nature's work.'

When I quoted this theory, I felt convinced that every one would recognise in it Professor Heyse's well-known opinion, an opinion which dates really from the school of Oken[1], and was one of those high

[1] 'Was tönt, gibt seinen Geist kund;' see Tylor, Primitive Culture, ii. p. 166.

generalisations in which that school delighted. When I saw that it was mistaken for my own matured opinion, I protested in every later edition of my Lectures against that interpretation, and I carefully guarded in everything I wrote against seeming to express a preference for any of the current theories on the origin of roots, or of language. The result has been that the upholders of almost every theory on the origin of language have claimed me as one of their supporters, while Heyse's theory, which I neither adopted nor rejected, but which, as will be seen, is by no means incompatible with that which for many years has been gaining on me, and which of late has been so clearly formulated by Professor Noiré, has been assailed with ridicule and torn to pieces, often by persons who did not even suspect how much truth was hidden behind its paradoxical appearance. We are still very far from being able to identify roots with nervous vibrations, but if it should appear hereafter that sensuous vibrations supply at least the raw material of roots, it is quite possible that the theory, proposed by Oken and Heyse, will retain its place in the history of the various attempts at solving the problem of the origin of language, when other theories, which in our own days were received with popular applause, will be completely forgotten.

Psychologists ought to study mind in language.

When at the end of my Lectures on the Science of Language I left untouched the two great problems, how mere cries, whether interjectional or imitative, could develop into phonetic types, and how mere vibrations of the nerves could develop into rational concepts, I confess that I did so with a strong hope that philo-

sophers by profession would quickly work the mine that had been opened before their eyes, or rather take possession of the new world that had been discovered for them. I have often wondered since at the apathy, particularly of the students of psychology, with regard to the complete revolution that has been worked in these days in the realm of language. Surely even if language were only the outward form of thought, no philosophy that wishes to gain an insight into the nature of thought, and particularly into the origin of reason, could dispense with a careful study of language. What would Hobbes or Locke have given for Bopp's Comparative Grammar?

Is it not extraordinary, for instance, that in the latest work on the Principles of Psychology, language should hardly ever be mentioned, language without which no thought can exist, or, at all events, without which no thought has ever been realised or expressed? It does not matter what view we take of language; under all circumstances, its intimate relation to thought cannot be doubtful. Call language a mass of imitative cries, or a heap of conventional signs; let it be the tool or the work of the mind; let it be the mere garment or the very embodiment of thought —whatever it is, surely it has something to do with the historical or palaeontological, and with the individual or embryological evolution of the human mind. It may be very interesting to the psychologist to know the marvellous machinery of the senses, beginning with the first formation of nervous channels, tracing the process in which the reflex action of the molecules of the afferent nerves produces a reaction of the molecules of the efferent nerves, following up the establishment of nervous centres and nervous

plexuses, and laying bare the network of those telegraphic wires through which messages are flashed from station to station. Yet, much of that network and its functions admits, and can admit, of an hypothetical interpretation only, while we have before our eyes another network,—I mean language in its endless variety, where every movement of the mind, from the first tremor to the last utterance of our philosophy, may be studied as in a faithful photograph.

And while we know the nervous system only such as it is, or, if we adopt the theory of evolution, such as it has gradually grown from the lowest to the highest state of organisation, without ever being able to watch the actual historical or palaeontological process of its formation, we know language, not only as it is, but can watch it in its constant genesis, and in its historical progress from simplicity to complexity, and again from complexity to simplicity.

For let it not be forgotten that language has two aspects. We, the historical races of mankind, use it, we speak and think it, but we do not make it. Even those who call the faculty of language congenital, must admit that to us every language is traditional. The words in which we think are channels of thought which we have not dug ourselves, but which we found ready-made for us. The work of making language belongs to a period in the history of mankind beyond the reach of the ordinary historian, and of which we, in our advanced state of mental development, can hardly form a clear conception. Yet that period must have had an historical reality as much as the period during which small annual deposits formed the strata of the globe on which

we live. As during enormous periods of time the Earth was absorbed in producing the carboniferous vegetation which still supplies us with the means of warmth, light, and life, there must have been a period likewise during which the human mind had no other work but that of linguistic vegetation, the produce of which still supplies the stores of our grammars and dictionaries. After the great bulk of language was finished, a new work began, that of arranging and defining, and of now and then coining a new word for a new thought or a new shade of thought. And all this we can watch ourselves in the quarries opened by the Science of Language. No microscope will enable us to watch the formation of a new nervous ganglion, while we can see with our own eyes the formation of new mental ganglia in the formation of every new word. Besides, whatever physiological psychologists may say, the whole network of the nerves is as much outside the mind as our skin is. A state of nervous action, it has been truly said[1], may be parallel, but it never is identical with a state of consciousness, and even the assumed parallelism between nervous states and states of consciousness is, when we come to details, beyond all comprehension[2]. Language, on the contrary, is not outside the mind, but is the outside of the mind. Language is very thought as much as thought is very language.

Is it not strange that Mr. Herbert Spencer, who is so much impressed with the idea that mental tendencies originally derived from experience impress

[1] H. Spencer, Principles of Psychology, ii. 592.
[2] H. Spencer, l. c., i. 140.

themselves permanently on the cerebral structure and are transmitted by inheritance, should have looked for the traces of these impressions in the convolutions of the brain, where no microscope will ever discover them, and not where they are visible to unaided sight and palpable to the commonest understanding, namely in language? How can it be otherwise than that the modes of thinking and speaking which are acquired by the race should become traditional, when every new generation has to make itself at home in the grammatical building inherited from its ancestors, and has to learn to walk in the shoes left by its fathers? We do not want a revival of mysterious innate ideas, if we can only open our eyes to see the unbroken continuity which holds untold generations together by the intellectual chains of language.

Spencer's Inheritance, explained by Language.

Just at the end of his interesting work on the Principles of Psychology Mr. Herbert Spencer makes a remark which shows that he is by no means ignorant of what a psychologist might learn from a careful study of language[1]. 'Whether it be or be not a true saying,' he writes, 'that mythology is a disease of language, it may be said with truth that metaphysics, in all its anti-realistic developments, is a disease of language.' No doubt it is, but does Mr. H. Spencer not perceive what enormous consequences flow from this view of language for a proper study of psychology, nay, of philosophy in general? If a disease of language can produce such hallucinations as mythology and metaphysics, what then is the health of language and what its bearing on

[1] L. c., ii. p. 502.

all the healthy functions of the mind? Nervous or cerebral disorders occupy at present a large portion in every work on psychology, yet they are in their nature obscure and must always remain so. Why a hardening or softening of the brain should interfere with the free movements of our mind will never be explained, though it may be said metaphorically that the nerves are somewhat damaged and do not properly receive and convey the nervous currents. But what we call a disease of language is perfectly intelligible; nay, it has been proved to be natural and inevitable. Mythology, as I have tried to show again and again, does not apply to religion and tradition only, but to every possible sphere of mental activity, and I ventured to call the whole history of philosophy, from Thales to Hegel, one uninterrupted battle against mythology, one constant protest of new thought and new language against old thought and old language. Not till we understand the true nature of language shall we understand the true nature of the human mind, and those who wish to read the real history of the development of the mind of man must learn to read it in language, the primeval and never-ending autobiography of our race.

Predicative and Demonstrative Roots.

There is one fact in the Science of Language which may be taken as established beyond the reach of controversy, namely that the whole wealth of words in the different Aryan languages can be traced back to a small number of roots. To me it seems as certain and as true as that water consists of oxygen and hydrogen. I call the number of roots small, whether we fix it as high as one thousand, or, after deducting all secondary roots, as low as one hundred. And what applies to

the Aryan, applies likewise to the Semitic, and to all languages which have as yet been studied and carefully analysed, not excepting the Chinese. In Chinese there is little or no outward difference between a word and a root, but large clusters of meanings, conveyed by the same sound, can be traced back here also to uniform sounds and simple original concepts.

It makes a great difference, however, whether we say that all words can be traced back to or can be derived from roots, because the latter expression would commit us more definitely to the admission that, chronologically speaking, roots came first and words afterwards, and that there must have been a time when people spoke in roots only.

Are roots words?

There has always been a certain flutter among philologists whenever this conclusion came to be drawn. It is certainly quite true that, if we argue logically, we shall have to admit that the ancient grammarians of India were right in maintaining that no root could ever be a word, and no word could ever be a root, and that even in cases where in Sanskrit a word was outwardly identical with its root, it was not so inwardly. In order to satisfy their logical conscience, they actually invented a class of suffixes which outwardly were nought, but which, if added to a root, raised that root from a root into a word. As roots are causes, and words are effects, the ancient Indian grammarians were perfectly right in holding that a root, in its very conception, is different from an actual word. But, admitting all this, we ought not to ignore the fact that in many languages there is no outward difference between roots and words, and that even in a language, like

the ancient Sanskrit of the Veda, which has long left the agglutinative for the inflectional stage, we find words, or at all events bases of words (padas), distinguished by no outward signs, whether suffixes, prefixes, infixes, changes of vowel or accent, from what we call their roots[1]. In answer to the question therefore whether the roots of Sanskrit represent what was at a very early time the whole language of the people, I answer both Yes and No. I answer No, because as soon as a sentence was uttered, a root, whether used for nominal or verbal purposes, ceased to be a root. I answer Yes, because the material used for such sentences was really supplied by what we now call the roots of Sanskrit.

Roots express Concepts.

We have next to consider another fact which the Science of Language has placed beyond the reach of reasonable doubt, namely, that every root expresses a concept, or what is called a general notion, or, more correctly, the consciousness of repeated acts, such as scraping, digging, striking, joining, cutting, eating, drinking, going, moving, standing, passing, felling, shaking, seeing, hearing, etc. They express acts, transitive or intransitive, and the consciousness of such acts, if expressed by any signs, whether phonetic or otherwise, must be considered as the first step towards the formation of concepts. Of this more hereafter.

Simple and Complex Roots.

In my Lectures on the Science of Language, i. 304, I proposed to divide all Aryan roots into Primitive, Secondary, and Tertiary. Representing consonants by C, and vowels by V, I included in the first class of—

[1] Selected Essays, i. p. 89 seq.; Aufrecht, Unâdi-Sûtras, p. 278.

A. Primitive roots:

(1) V, e. g. I, to go;
(2) VC, e. g. AD, to eat;
(3) CV, e. g. DÂ, to give.

B. Secondary roots:

(4) CVC, e. g. TUD, to strike.

In secondary roots one consonant is often variable. By the side of TUD, to strike, we find, according to native grammarians,

TUP, topati, tumpati, tupati, Gr. *τύπ-τω, τύμπανον*, etc.
TUBH, tubhnâti, tubhyati, tobhate, to strike;
TUPH, tophati, tumphati, tuphati, to strike;
TU*G*, tu*ñg*ati, to*g*ati, to strike, to stir;
TUH, tohati, to torture;
TU*S*, tosate, to strike.
TUR, tutorti, TÛR, tûryate, TURV, tûrvati, may belong to a different cluster.

C. Tertiary roots:

(5) CCV, e. g. PLU, to flow;
(6) VCC, e. g. ARD, to hurt;
(7) CCVC, e. g. SPA*S*, to see;
(8) CCVCC, e. g. SPAND, to tremble[1].

I thought at that time that the simple roots in classes A and B should be considered also as the more primitive, while those of class C would belong to a later period. I also thought that the simple roots expressed primary and general, the complex roots secondary and more special meanings. But the facts of language, such as we know them at present, do not support that theory. The two processes of generalising what is special and specialising what is general go on uninterruptedly in the growth of language, and to postulate in the beginning simple roots with the most general meanings as previous to

[1] In tertiary roots the third consonant is generally a nasal, semivowel or sibilant.

complex roots with more special meanings would be the same mistake in linguistic history as in natural history to claim for the genus a priority before the species, or for the species before the individual[1]. The process of simplification and elimination in roots is quite as possible as that of specialisation, and such roots, for instance, as MÆK, MÆS, MÆD, MÆDH, expressing different kinds of crushing, may well have existed previous to or contemporaneously with the simple root MÆ, to grind, and need not, as I formerly supposed, have expressed later modifications of one common original type MÆ[2].

Demonstrative Elements.

In addition, however, to these roots, which are predicative and conceptual, we saw that it is necessary to admit a small class of what I call demonstrative or pronominal roots, though it might be better to call them simply demonstrative elements. They merely point to an object in space and time, and express what we now express by here, there, then, this, that, near, far, above, below, etc. In their primitive form and intention they are addressed to the senses rather than to the intellect. They are sensuous, not conceptual. Some scholars have endeavoured to trace them back to conceptual roots. They see in aham, ego, for instance, a derivative from AH, to breathe or to speak, just as they derive â t-man, self, from a root meaning to breathe. They would see in the demonstrative ta and tad the same element as in the root TA and TAN, to stretch, in sa a derivative from the root AS, to breathe and to be.

[1] Sayce, Introduction, vol. i. p. 13.

[2] Selected Essays, vol. i. p. 90 seq.

It might, no doubt, simplify the problem of the origin of language if we could claim for the whole of it one and the same conceptual origin, but the evidence, if any, would necessarily be of the most evanescent character[1]. If any of these demonstrative roots can be satisfactorily traced back to conceptual roots, I see no reason to oppose such a process on principle; on the contrary, we know that there is no lack of analogies in ancient and modern languages[2]. But until that is done, I can see nothing against the theory which accepts these demonstrative elements as remnants of an earlier stage, if not of language, yet of communication, just as we look upon clicks as survivals of emotional sounds imbedded in the layers of conceptual speech[3].

Suffixes, Prefixes, and Infixes.

These demonstrative elements appear not only as the material of prepositions, pronouns, and adverbs, but likewise in the shape of suffixes, prefixes, and infixes, which raise a root into a base, and of grammatical terminations, which change a base into a word.

Thus from a root KHAN, to dig, a base was formed KHAN-a, meaning originally no more than what might be rendered in modern speech by 'digging-here,' τόδε τι καὶ ποῦ καὶ νῦν. In addition to this, many other bases were thrown out by repeated combinations of predicative and demonstrative elements, such as KHĀN-i, KHĀN-āka, KHAN-ana, KHAN-itar, KHÂ-ta, KHÂ-tra, &c., all being intended originally, it would seem, for no

[1] Lectures on the Science of Language, vol. ii. p. 33.

[2] Sayce, Introduction, vol. ii. p. 25.

[3] Professor Noiré in his Logos (p. 186) pleads strongly and ably for the derivation of demonstrative from predicative roots.

more than to predicate digging of something in space and time, and varying in their application according to the tastes of various speakers, families, or villages. We are speaking here of times so far beyond the reach of history, and of intellectual processes so widely removed from our own, that no one would venture to speak dogmatically on what was actually passing in the minds of the early framers of languages when they first uttered these words. It is possible that some of these suffixes were intended from the first for something more special than a mere 'digging-here,' 'digging-now.' Some of them may have been intended from the first for a 'digging-he,' i. e. a labourer, or for a 'digging-it,' i. e. a spade, or for a 'digging-now,' i. e. labour, or for a 'digging-there,' i. e. a hole. But even if this had not been so, we could perfectly well understand how, after centuries of shaking and winnowing, some derivatives would have been used in one, others in another meaning. Even now, many of these derivative suffixes can be used in more than one meaning. Thus KHAN-a means not only a digger, but also a hole; KHAN-i, a digger and a mine.

All this is perfectly true, and the highest credit is due to Professor Ludwig for having been the first to point out that the suffixes as well as the personal and case terminations were not all from the beginning so many independent words, each with its own definite meaning, and glued to a root in order to modify its meaning. So far I quite agree with the founder of what has been called the new school of Comparative Philology. But, if I understand him rightly, I cannot quite agree

Agglutination or Adaptation. Ludwig.

with what seems to be his opinion, namely, that there was in the pro-ethnical Aryan language no agglutination or combination at all. These demonstrative elements must have had their independent existence, quite as much as the predicative roots, and I do not see how we can deny that it was a real act of synthesis which changed KHAN+A into khana, and 'digging-here' into 'digger.' To suppose that khana, khani, khanana, khanitra, khâtra, &c. all tumbled out ready-made, without any synthetical purpose, and that their differences were due to nothing but an uncontrolled play of the organs of speech, seems to me an unmeaning assertion for which, so far as I can see, Professor Ludwig himself is less responsible than some of his followers[1]. I fully admit that when we once begin to speak of pro-ethnic formations, real arguments, proof and counter-proof, become very difficult. But even in those nebular regions the intelligible seems to me always preferable to the unintelligible, and whereas we can understand the combination of a root with various demonstrative elements for a more or less definite purpose, it is difficult to realise in any way the promiscuous outpouring of words, agreeing in their predicative elements, but bulging out into suffixes, and afterwards in terminations, without any guiding principle. According to some of the more recent writers on this subject, suffixes and terminations would seem to be like corns and bunions, mere excrescences on the surface of roots, which are there, and require no further explanation, nay, which it is wrong even to attempt to explain.

[1] Duttens, Exposants Casuels, p. 214.

What must be admitted, however, is that many suffixes and terminations had been wrongly analysed by Bopp and his school, and that we must be satisfied for the present in looking upon most of them as in the beginning simply demonstrative and modificatory.

Significative Suffixes.

But even thus I should not shut the door altogether against the old theory that some suffixes contained elements of independent significance. I do not think that it has ever been proved that the suffix tara, for instance, of the comparative could have had no connection with the root TÆR, to cross[1], and that the suffixes expressing an agent[2] in dâ-tár, δο-τήρ, dator, and an instrument in dâ-tram, sickle, had nothing to do with the same root. No one would deny that tirás, trans, across, through, is connected with that root. If then we can form in Sanskrit a compound dyu-tara, crossing the sky, why not u*kk*ais-tara, crossing what is high, and mahat-tara, exceeding what is great, i. e. greater. If ut-tara (uttára?) in dur-uttara[3] might be called a karmadhâraya, út-tara, the comparative of ut, might be taken as a tatparusha compound. We do not doubt as yet that in ud-ak, upward, ak represents the root A*ñK*, to bend; why then should tara in ut-tara not be derived from the root TÆR, to cross? Does any one believe it an accident that while the suffix tar expresses the agent, tram expresses the instrument? I do not deny that other explanations are possible, and that much may be said in their defence; but I cannot

[1] Bopp, Comp. Grammar, § 291

[2] Ibid. § 815.

[3] Or in uttára*h* (var. lect. úttira*h*), Ath. Veda, xlx. 32. 1.

persuade myself that every new theory is preferable simply because it is new, simply because it differs from Bopp.

We must remember that there are many instances in the Aryan languages where an independent word at the end of a compound has been ground down to a mere termination. We still understand the process which gives us such a word as four-fold, German vier-fach, because to fold is still used in the sense of wrapping, and Fach in German in the sense of division. More likely, however, fach is the M. H. G. vach, a fold. This fold comes from the root PAṚK, in Greek πλέκ-ω, in Latin plec-to, in Gothic fal-tha, where the guttural between l and th is lost, as it is likewise in O. Slav. ple-t-ą, while it has been preserved in Goth. flaht, a fold, and in O. H. G. flih-tu, and flah-s, flax. We have the same root in Latin sim-plex, du-plex, and I doubt whether the Romans were more conscious of the radical meaning of plex than the Greeks were of πλάσιος in διπλάσιος. At all events in the Greek ἁ-παξ, once, where the second element παξ must have had originally the same meaning, the connection of παξ with any such root as παγ in πήγ-νυμι, which would correspond with German fach (Goth. fahan, O. H. G. fach), was completely forgotten.

In Sanskrit, *k*atur-vaya, fourfold, shows its connection with VI, to weave; sa-k*r*it, once, with KAṚT, to spin; tribhu*g*, threefold, with BHU*G*, to bend. Then why should not *k*atur-vidha, fourfold, have had a similar origin, and lastly, why should we not admit a significative element even in dhâ of *k*atur-dhâ, four-times, and, if so, likewise in δίχα and διχῆ and διχοῦ? No doubt it is easier to say that

χα is a pronominal element, but the easier is not always the truer.

Another instance of the same process we see when we compare the Sk. pûrvedyus, where dyus is clearly meant for day, with πρωϊζά, the day before yesterday. Here, as well as in χθι-ζός, ζα and ζος are the last remnants of an independent word, quite as much as in noctu diusque, hodie, and yesterday. But if so, why should we hesitate to derive sa-dyas, at once, from the same source, so that it meant originally on the same day? Why again should a-dya, now, not be taken as representing an original this day? One step leads to another, and no doubt we must be careful not to venture too far. Still, if dyus and dya can represent day (Sk. dyu and div), could not dum (cf. biduum) in Latin be an accusative of the same base, so that non dum was meant originally for 'not this day,' just as pas encore was passum hanc horam, 'not this hour'? These questions cannot be answered very positively, but neither do we get any very positive answers from those who deny that these words are anything but pronominal. I do not mean to say that δήν, long, must stand for διϝην, or δή, now, for διϝη, but phonetically there is no difficulty, as little as there would be in deriving the corresponding Latin form jam from dyâm or divam. The different forms under which Dyaus appears as Ζεύς, Ζήν, Ianus, and Iovis, would furnish sufficient analogies for the phonetic changes which have to be granted in these etymologies.

I admit that many things are problematical in these derivations and in others proposed by Bopp, Schleicher, and Curtius, but the pro-ethnic abyss

into which Ludwig jumps is after all quite as dark as that in which a Curtius disappeared. The evolution of every kind of suffix out of the simple at, as worked out by Ludwig in his 'Agglutination oder Adaptation,' is extremely able, but it deals with possibilities and no more. And what in the end is at, and what are all the suffixes derived from it but demonstrative elements? That some, I should even say, that many of the Aryan suffixes did not originally contain the meaning which we ascribe to them, but 'convey it by accident only, in the course of time and through many changes[1],' this I admit has been established by Ludwig and his followers[2]. We can watch this process of adaptation or repartition even in such recent cases as the gradual assignment of the reduplicated perfect to the expression of time past, and of nomina agentis, such as dâtâ, to the expression of time to come.

But we must be on our guard. If demonstrative elements have been mistaken for independent words, glued to a root, it is possible also that independent words may have been mistaken for so-called demonstrative elements. A study of Turanian languages would serve, I believe, as a very useful warning against too rash and too one-sided conclusions. I cannot see the justice of a dilemma put before us by Ludwig that 'if the Aryan languages are agglutinative, they are not inflexional, or, if they are not agglutinative, then the suffixes and terminations cannot have been glued on[3].' Isolation, combina-

[1] Ludwig, l. c. p. 132.

[2] See particularly the excellent work by Alfred Duttens, 'Essai sur l'origine des exposants casuels,' 1884.

[3] L. c. p. 24.

tion, and inflection are but three phases in the growth of language. Some languages may be arrested in the first or isolating, some in the second or agglutinative stage, while others pass on to the third or inflectional stage; but those which pass on to the third stage, i. e. most of the known literary languages of the world, invariably retain traces of their passage through the two former stages [1].

Composition and Agglutination.

How can we deny the power of agglutination to a language like Sanskrit which possesses in the highest degree the power of composition, which is but another name for incipient agglutination? We have in Sanskrit kumbhakâra, pot-maker. This is a compound in which kâra is a significative element, maker, glued to kumbha, pot. If instead of this we find in the modern Indian dialects kumbhâra, a potter, shall we say that âra is here a mere excrescence, a demonstrative element ra, which, we are told, may have the same function as na, as in kuha-ra and kuha-na, both names of serpent [2]; or may we not rather see in âra of kumbhâra a phonetic corruption of kâra? There is no doubt a suffix âra in aṅgâra, tushâra, etc., but this could never have formed kumbhâra, while kâra is almost the same as the primary suffix kara in púshkara, tás-kara, etc., which Professor Aufrecht once identified with Latin cro in sepul-cro, and culo in curri-culo [3].

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[1] Selected Essays, i. 53.

[2] Duttens, l. c. p. 193. But what if kuhara and kuhana were formed like ku-*kara*, etc., from two different roots, HÆ and HAN? What if k*ri*-kara were a bird that makes k*ri*, k*ri*kana a bird that sings (kan) k*ri*?

[3] Unâdi-Sûtras, p. 275.

If we find in the modern Indian dialects a locative hṛidayme, 'in the heart,' it would no doubt save much trouble to say that me is a pronominal element, connected with the m in aham, tvam, etc. Fortunately we have in modern languages a certain guidance which is altogether absent in pro-ethnic periods, and we can show how the termination me was preceded by mâ, mâha, maha, mâdha, maddha, which maddha is a corruption of madhya, medius. In Bengâli[1] hṛiday-madhye, in the middle of the heart, is a real compound, it is agglutinative, while hṛidayme[2] is inflectional. The Chinese manner of expressing locality is, as we are assured, not yet agglutinative, but purely isolating or juxta-positional, because in kûŏ, empire, and ćung, middle, i.e. in the empire, each word retains its independence and its accent[3]. But even in Chinese, particularly in its spoken dialects, a tendency towards agglutinative and inflectional forms has been pointed out[4].

No one with any sense of justice will deny to Professor Ludwig the merit of having shown that we know much less of the formative elements of the Aryan language, while they were still independent significant words, than we believed during the days of Bopp, Schleicher, and Curtius. In one sense he is no doubt the founder of a new school of Comparative

[1] M.M. On the Relation of Bengâli to the Aryan and Aboriginal Languages of India, in Report of British Association, 1847, p. 339.

[2] Bhandarkar, in Journal of Bombay Branch of R. A. S., 1885, vol. xvi. p. 251.

[3] Lectures on the Science of Language, vol. i. pp. 128, 253.

[4] Ibid. p. 376.

Philology, which has rendered excellent service, if only by its agnosticism. But even though we often cannot tell what these formative elements were, this is very different from asserting that they were nothing by themselves, and that our nominal and verbal bases and our inflected nouns and verbs are not the result of a rational synthesis, but of a kind of spontaneous generation ex nihilo.

In some cases I still hold as strongly as ever that the formal elements of Aryan grammar were purely predicative in their origin. Besides tar and tara, of which I treated before, I hold that maya (μεο) comes from the root MÂ, to measure, or MI, to establish. Hira*n*-maya meant gold-made, or gold-like, before it came to mean golden. This maya varies, we know, with vaya and yaya. Besides maya we have miya, and if miya in *rig*-miya comes from MI, why not min in *rig*-min? And then, does not man stand to maya like min to miya? And if we have traced min and man to predicative roots, are there not many cognate suffixes which would have to follow the same rule? It may seem very vague to attempt to connect the participial termination mâna, μενος, or the suffix man, manta, Lat. mentum, Gr. μων (as in a*s*-man, a*s*-manta, ἄκ-μων, tegi-men, tegi-mentum), with the root MÂ, or with the root MAN. But if we see that in French we can speak of a stone falling lourdement, heavily, i.e. luridâ mente, i.e. with a yellow, dirty, lazy, heavy mind, we shall feel less sceptical as to what is possible in language by way of changing significative into purely formal or grammatical elements.

Is it likely that the numerous suffixes which

express descent, or coming from, such as âyana, ấyani, etc., should have nothing to do with ăyana, coming? Is it a mere accident that the suffix bha generally forms names of animals?

I have not been afraid to assert[1] that the Latin suffix tas, tatis, the Sanskrit tâti, might have been formed from the root TAN, to stretch, and that it meant originally the same as tantu, a string, then a series, a class; and I am not aware of any objections against this theory, beyond vague expressions of incredulity. If then tâti may come from TAN, why not the adjectival suffix tnu, which expresses habit, custom, ability, such as k*ri*-tnu, able to work, clever; ha-tnu, able to kill, i. e. a weapon; *g*iga-tnu, quick; pîya-tnu, hating? And if tnu comes from tan, then tna and other suffixes would follow suit.

By the side of tnu, there is another suffix, snu, as in *k*ari-sh*n*u, poshayi-sh*n*u, etc. This has sometimes been explained as a phonetic corruption of tnu, but as tnu comes from TAN, snu may have come from SAN, to achieve, to gain, from which we have si-snu (sish*n*u), wishing to gain. We find the root SAN at the end of compounds in such words as—

Go-sán (RV. iv. 32, 22), cow-gaining;
Go-sâ*h* (RV. ix. 2, 10), cow-gaining;
Go-sáni*h* (RV. vi. 53, 10), cow-gaining.

Why should we hesitate to connect the primary suffix snu with SAN, while we do not doubt for a moment that such forms as si-snu (sish*n*u) or go-san, nay, even go-sa, are connected with that root?

[1] 'Mind,' July 1876; see Note on p. 248.

This is not the place to work out the question of the origin of suffixes in full detail. It is sufficient for my purpose to have shown that some suffixes, both primary and secondary, may with some effort be traced back to predicative roots, and that the greater facility in putting them all down as 'somehow pronominal' does not prove the greater correctness of that theory. But even if many of these suffixes are purely pronominal, if sarit, river, for instance, was originally no more than S A R, running, and it, here, even then we have to admit an act of synthesis, which is intelligible, instead of the process of demonstrative excrescence, which, to my mind at least, conveys no meaning at all.

Terminations.

And this argument, whatever its value may be, applies with the same force to terminations as to suffixes. Bopp and Curtius may have gone too far in identifying the terminations of nouns and verbs with the actual pronominal bases which we find in the Aryan languages. The termination of the nom. sing. in s need not be identified with the Sk. pronoun sa, he, but both must have proceeded from the same source; they certainly are demonstrative, not predicative. The personal terminations in Sanskrit, mi, si, ti, e, se, te, m, s, t, i, thâs, ta, need not be derived straight from the pronominal bases mad, tvad, tad, and svad, nor need we have recourse to such compounds as dâ-mâ-tvi, i.e. give-I-thou, in order to account for Latin damus, we give[1]. But though

[1] I was the first to remonstrate against these derivations proposed by Curtius, at a time when to remonstrate against him was still considered heresy; see 'On Curtius' Chronology of the Indo-Germanic Languages,' in Selected Essays, vol. i. p. 93.

all phonetic laws would cry out against such proceedings, and could hardly be quieted with the assurance that they had no right to exist in proethnic periods, the broad fact remains that these terminations and their corresponding pronominal bases claim in the end a common origin. The elements of such terminations belong by their very nature to a period of language long anterior to that in which they could be used as dead, empty, and formal exponents, and whoever knows the wide influence both of phonetic change and of dialectic variety in the most ancient periods of language, will not be surprised at the widest dialectic divergences between pronominal roots and verbal and nominal terminations which in the beginning of all things are supposed to have been identical. It is a false method to attempt to prove minutely what from the nature of the case can only be proved broadly.

Terminations in Ugric Languages.

It is generally admitted that the Ugric languages, to say nothing of other members of the Turanian class, form their declension and conjugation by means of agglutination. They are called agglutinative, not because they are entirely free from inflection, but because there is in their grammar a decided preponderance of agglutinative forms. In those, however, which have received considerable literary cultivation, the principle of inflection has made so much progress that my friend Kelgren, for instance, treated Finnish as an inflectional language. If, then, we examine these languages more carefully, we shall find the same discrepancies between their terminations and their pronominal roots as in Sanskrit, Greek, and Latin. If any one will only glance at the comparative tables, printed at the end

of my 'Letter on the Turanian Languages' (1853), he will see in Finnish the pronoun of the first person minä, but the terminations n and ni; the pronoun of the second person sinä, but the terminations t and si; the pronoun of the third person hän, but the terminations hn, pi, wi, nsa, sa. Again, in the declension of Finnish the terminations expressive of every possible kind of locality have been reduced to four elements, of which, if we adopt Professor Ludwig's principles, it would be very difficult to decide whether they should be treated as words originally independent and significative, or as pronominal elements, or as mere excrescences. All scholars, however, seem to be agreed that the four elements, na, he (si), ke, and ta, with which the thirteen cases in Finnish are built up, had originally their own meaning, and that they are related,

1. he (si) to se, he, into, sisä, the interior;
2. ke to ke, thither, ki, without;
3. ta to ta, away, táv, distant;
4. na to n, ne, na, near, with, na, near space[1].

If out of such elements Ugrian scholars succeed in constructing the whole framework of the Finnish declension, Aryan scholars need not be afraid to recognise similar constituent elements in the terminations of the Aryan noun. A few such demonstrative elements, or whatever else we like to call them, would originally have been quite sufficient to express every case of our declensions, leaving the noun, without any such distinction, to do service for the nominative. Nor do

[1] Boller, Die Declination der Finnischen Sprachen, Sitzungsberichte der K. K. Akademie in Wien, Philos. Hist. Classe, xi. Band, 1853, p. 973.

I see any difficulty in following the process through which, either by phonetic change or by imitation, a few such compounds of nominal bases with local adverbs could be differentiated and adapted to all purposes of declension. During a period of language in which Professor Ludwig[1] admits a possible transition of svi into bhi, because in Greek, but in Greek only, σφε becomes σfε, and Curtius the transition of tvi-tva both into thas and sai[2], the difficulty of deriving all nominal terminations from a few pronominal elements such as sa, ta, na, bha would not be very great. But it stands to reason that when we manipulate such vague elements and under such lax phonetic conditions, we can hardly expect unanimity as to the exact process by which our analysis ought to be conducted. Hence the divergence between the results arrived at by Bopp, Pott, Benfey, Grassman, Schleicher, Curtius and others[3]; hence also the unwillingness of other scholars to add one more to the many guesses as to how svi becomes abhi, and abhi ai, and ai e, and e i. Why will not scholars learn that there are certain subjects which from their very nature do not admit of accurate treatment, and that across a quagmire you may indeed throw a high bridge, but you cannot make a footpath? There is surely a via media between the extreme opinion to which Ludwig would lead us, that what we call the grammatical elements of language had never any independent existence at all, and the opposite opinion of M. de Saussure and his followers, that we can

[1] Enstehung der A. Declination, p. 181.

[2] Selected Essays, vol. i. p. 94.

[3] See Hübschmann, Casuslehre (1875), p. 93.

analyse every form into the most minute component elements. It is wonderful what brilliant results have now and then been obtained by this minute phonetic analysis. One hardly trusts one's eyes when one sees the phonetic analogies running through languages so long dissociated as Sanskrit and English. But here too there is the danger of going too far, and of forgetting that though language is taught by grammarians, it was not made by grammarians. Language is made by analogy, but often by an instinctive, not by a reasoning analogy, and what to the earliest framers of language seemed analogous, is often by us perceived to be really anomalous.

We may speak, for instance, of a_1s as the termination of the nom. plur. after stems in a_2. But I doubt whether before the invention of grammar, and before the conception of any such thing as grammar, people were conscious of a_1s as an independent termination. I doubt even whether this as was ever an independent element; at all events there is more than one way of accounting for it. The oldest Vedic form of the nom. plur. is asvâsas. This may be looked upon as an abbreviation of a proethnic form asvas and (asv)as, and one such form would have become the prototype of millions. We must not suppose, however, that after such a typical form as asvâsas had once arisen, it was submitted to an analysis, and that all future plurals were the result of a conscious synthesis. Far from it. A man who knew that asvas is one horse, and asvâsas many horses, would form by an unconscious process of analogy vrikas, one wolf, and vrikâsas, many wolves.

This form asvâsas, which still occurs in the Veda,

may in course of time have been shortened to asvâs, and who could tell how much of âs belonged to the stem, how much to the termination? Still M. de Saussure, guided by the strictest phonetic principles, thinks that he can analyse this âs into two independent elements[1], which, even during the earliest historical period, were separated by a perceptible hiatus. The termination of the nom. plur. is supposed to have been a_1s, the final vowel of the stem a_2. The original synthesis therefore would have been $akwa_2 = a_1s$, pronounced ekwoes, contracted ekwôs. I do not say that this is impossible, I only wish to keep the door open to other possibilities, such as the phonetic contraction of âsas into âs, and I should certainly want stronger confirmation for a phonetic rule that $a_2 + a_1$ becomes $â_2$ than this analysis of asvâs.

Again, if I am told that in order to explain yuktes[2] as the genitive of yuktis, we must suppose that the termination $-^As$ changed the i of the stem to y, and that y^A became î, which î, preceded by a_1, would become ê, I cannot help asking myself whether this complicated process, however creditable to the analytical ingenuity of the grammarian, ever took place in the mind of an illiterate pro-ethnic Aryan, and whether he would really have been aware of any difference between $k_2a_1twA\text{–}á_2r\text{–}a_1s$ and $k_2a_1twá_2Ar\text{–}a_1s$[3].

However, these minutiae belong to comparative grammarians, and though I am afraid they may be carried too far, I am the last man to refuse them the full credit which they deserve. All I stand up for is that there must be both in the synthesis and analysis

[1] De Saussure, Système Primitif des Voyelles, p. 91.
[2] Ibid. p. 206. [3] Ibid. p. 210.

of grammatical forms broad and intelligible principles. Now synthesis is only intelligible when we have two independent elements that can be put together; hence, I hold, that in the beginning suffixes and terminations were either demonstrative or predicative elements, though by phonetic corruption and false analogy their original character was often obscured and they dwindled down to unmeaning signs. Many of them we must accept as such, without being able to reduce them to their primitive phonetic form. Where phonetic analysis can restore their original form, its results will always be welcome, but in many cases an ignoramus will here too be a greater proof of wisdom than novimus. In the Science of Thought we stand on the broad principle that nothing can exist in language which had not originally a purport: in the Science of Language we must be satisfied to explain all we can, though conscious all the time that we cannot explain all we wish.

Case-terminations local.

One result, at all events, seems to me firmly established with regard to the Aryan case-terminations, namely that all of them, not excepting those of the nominative, accusative, and genitive, were in the beginning local. An exception is generally made in favour of the nominative and accusative, as being from the beginning intended to convey more general or purely logical relations. But though it may be true that in these two cases their local meaning was obscured and forgotten at a much earlier time than that of the other cases, yet in the beginning the nominative through its demonstrative termination expressed clearly the here and there in space, and the accusative the hither and thither,

or the object towards which the action of a transitive verb was conceived to tend[1]. As to the genitive, it was either predicative and adjectival, conveying the genus to which a subject belonged[2], or it was an ablative, expressing origin and removal. The originally local character of the other cases, the locative, ablative, instrumental, and dative, is no longer questioned, and recent researches in comparative syntax have shown how clear are the transitions from one case to another, and how untenable are the views of all philosophical grammarians when they attempted to determine the sphere of each case by one fundamental relation assigned to each. Here, as elsewhere, historical research must form the foundation of philosophic reasoning, not vice versâ. We may follow the ways of language and understand them by following them, but we can never trace beforehand the ways which language is to follow, except in the most general way. Certain it is that the abstract meanings, whether modal or causal, which were formerly considered as the fundamental meanings of the case-terminations have been proved to be everywhere of later date than the local and temporal meanings, a fact which is in full harmony with all that the Science of Language has taught us of the growth of human language and human thought[3].

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[1] Chap. vi. p. 319.

[2] Lectures on the Science of Language, vol. i. p. 122, as quoted by Hübschmann, Casuslehre, p. 104. I had proposed the same explanation in my Letter on the Turanian Languages, 1853, p. 41, and, earlier still, in my paper on Bengâli, 1847, in the Transactions of the British Association, p. 41.

[3] On this point I differ much from Noiré's views as expressed in his 'Logos,' pp. 246 seq.

There are languages, such as Chinese, in which there is as yet no outward difference between what we call a root, and a noun or a verb. Remnants of that phase in the growth of language we can detect even in so highly developed a language as Sanskrit. But it was one of the characteristic features of Sanskrit and the other Aryan languages that they tried to distinguish the various applications of a root by means of what I have called demonstrative roots or elements. If they wished to distinguish the mat, as the product of their handiwork, from the handiwork itself, they would say 'Platting-there;' if they wished to encourage the work they would say 'Platting-they, or you, or we.' We found that what we call demonstrative roots or elements must be considered as remnants of the earliest and almost pantomimic phase of language in which language was hardly as yet what we mean by language, namely logos, a gathering, but only a pointing. How some of these elements came in time to be restricted to certain meanings, such as here, there, he, thou, I, it, etc., we cannot tell. All we can say is, that we find these elements as adverbs, local and temporal, as prepositions, as pronouns, as suffixes, and as terminations of declension and conjugation, and that in their skilful employment consists the power and the charm of Aryan speech.

How roots became nominal and verbal bases.

Take, for instance, the root YUDH, to fight. As a root, that is, as the type from which both verbs and nouns are derived, we may call it a mere abstraction. But it exists in exactly the same shape, only with a new purpose, both as a nominal and verbal base. Yudh as a noun, means

YUDH and its derivatives.

battle, and followed by a local demonstrative element, we find yudh-i, i. e. in the battle. Yudh may also mean fighter, and followed by another local demonstrative element, we find yudh-su, i. e. yutsu, in the sense of 'among fighters.' But as a fighter calls the tool with which he fights, a fighter likewise, we find yudh, followed by another local demonstrative element, viz. yudh-â, in the sense of 'with or by a weapon.' These so-called cases were all originally local adverbs, which may have existed sporadically long before there was any idea of declension in our sense of the word. The purely subjective nominative and the objective accusative, when no longer local, were probably the latest forms to assume permanency. The root or base YUDH, however, was not to be mistaken in any of these forms. Nor do I think it so marvellous as some scholars represent it to be that Sanskrit grammarians should have been able to discover the roots of their language, when we consider in how many words they still stand out in bold relief. Let us remember that every root can be used and many of them are used at the end of compounds, and we shall hardly be surprised that what every speaker was able to see, should have been seen by the ancient grammarians. A language which possesses such words as kravya-ád, flesh-eater, visva-ád, all-eater, havya-ád, libation-eater, goshu-yúdh, fighting among cows, amitra-yúdh, fighting enemies, gâtu-vid, road-knower, go-vid, cow-knower, etc., can leave no doubt in the minds of its speakers as to the character of AD, YUDH, and VID.

VID, then, as a nominal base, would mean knower; as a verbal base we find it, without any change, in

vid-má, we know. In order to express duration, however, roots were frequently reduplicated, and thus we find the verbal base yu-yudh, followed by the demonstrative element e, in yu-yudh-e, i.e. 'continued fighting-he,' or the reduplicate perfect, 'he has fought.' We also find it with a less perfect reduplication, or with a demonstrative prefix, called the augment, in a-yudh-ta, i.e. ayuddha, he fought.

In this early phase of language the formal difference between a nominal and verbal base of the same root consisted therefore simply in the difference of the demonstrative elements by which each is followed, and occasionally in the modification of the verbal base by means of reduplication, augmentation, etc.

But in a later phase the Aryan languages removed what was felt to be ambiguous by a sharper differentiation of verbal and nominal suffixes, the latter being used when an act was predicated locally, the former when it was predicated temporally. Thus a fighter was called yudh-ma, the weapon â-yudh-a, the place of fighting yudh-i, all meaning originally no more than fighting-there; while for verbal purposes a new base was formed, yudh-ya, e.g. yudhya-te, he fights, where the chief object was to predicate the duration of an act, whoever the agent may be.

Analysis of words.

We have thus finished our analysis of words. We have seen that their constituent elements are predicative roots and demonstrative elements. A root may be in form identical with a nominal and verbal base, but in most cases it has been differentiated so as to serve better either its verbal or its nominal purpose. This was done by means of suffixes, the origin of which is often doubtful, though we cannot doubt that it must have been rational, that

is, that these suffixes also must have been at first either demonstrative or predicative. Having thus arrived at nominal and verbal bases, we watch a new rational synthesis in the formation of what is now called declension and conjugation. And here again, though we have to confess our inability to account for the origin of every nominal or verbal termination, we can still see enough to enable us to uphold the general principle of a rational synthesis, that is, of an intelligible purpose with which case, number, and sex were expressed in nouns, person, number, tense, and mood in verbs. Speaking broadly, we can now understand how the foundations and the walls of the primeval temple of language were built. Give us roots, predicative and demonstrative, and we can undertake to rear a similar structure, not perhaps so grand and durable, but at all events answering the main purpose of language. As in exploring the ruins of ancient palaces we find rough-hewn stones, bricks, mortar, straw, and wood, and sometimes mere sand and dust of which we can give no account, so in sifting the débris of language we meet with roots, predicative and demonstrative, with suffixes, prefixes, infixes, and often with elements so ground down and disintegrated that we cannot tell what they were and whence they came. No wonder if later generations were so awe-struck with the grandeur of Cyclopean walls and Devil's bridges that they thought them the works of beings of more than human strength and skill. No wonder if we ourselves, when we first listened to the hymns of the Veda or the ballads of Homer, should have believed that the language in which such thoughts could be embodied must have been of superhuman origin.

But wonder has now given place to understanding. We know now how words were made, and the problem of the origin of language has been finally reduced for us to the problem of the origin of roots, as the embodiments of our earliest concepts.

Before we proceed, however, to the consideration of that problem, we have still one objection to meet. We believed that in accounting for the formation of nouns and verbs we had accounted for the formation of language. But we are told by some philosophers that this is a mistake. Much stress has of late been laid on the fact that as little as letters are the constituent elements of words, are words the constituent elements of language. Language, we are told, can exist as a sentence, an ἀπόφανσις, only, and no sentence, whether affirmative or negative, can exist without a noun and a verb. The fact, as such, is very true and very important, but it hardly required very elaborate proof, at least not to a student of Aristotle[1]. But what does our analysis of language into predicative roots and demonstrative elements teach us?

Every word originally a sentence.

Suppose the root MÆR meant to grind, the mere shout MÆR, addressed by a leader to his men, would surely have been a sentence, and have conveyed to them a meaning, namely a command; it would have produced the effect of making them understand something, namely that it was time for them to begin their daily work of grinding stones.

Again, if the sounds VÂ or VABH had long accompanied the act of platting, or braiding, or

[1] Arist. de Interpret. cc. 5, 10.

weaving, these sounds by themselves, uttered by the women of a clan, would have reminded them that it was time to begin their work. VÂ, weave, whether as a reminder or as a command, would have as much right to be called a sentence as when we say, Work! i. e. Let us work! In one sense, the imperative may truly be called the most primitive sentence, and it is important to observe how little in many languages it deviates from what has been fixed upon as the true form of a root.

From the use of a root in the imperative or in the form of a general assertion there is a very easy transition to its employment in other senses and for other purposes.

Let us imagine the furniture of a cave-dwelling or a lacustrian hut, consisting chiefly of scraped skins and platted mats or mattresses, and let us suppose a sudden fire, or inundation, or an attack of enemies, would not in a general Sauve qui peut the mere shout of VÂ have reminded the women and children to carry off the mats? Would it not have been tantamount to our sentence, 'The mats, the mats!'

Every logician knows that we can predicate in a sentence only, and as the chief object of language is predication in the form of a proposition, it has quite properly been concluded that words had no right to exist except as integral parts of a sentence, or, as some scholars put it, that the sentence existed before single words. Students of language were no doubt staggered when they were told that the words which expressed the subject and the predicate and, in some languages, the copula also, could not have existed apart from the sentence which they formed, still the logician was in his right and his arguments seemed un-

answerable. What could have been the use of forming such words as snow and white by themselves? No one, not even a troglodyte, would amuse himself by saying snow, or by saying white, still less by saying is. And as there was no demand for such utterances, it seemed quite natural to conclude that there could have been no supply, as little as there would ever be a supply of right boots in a market where only pairs of boots will answer any purpose. All this is perfectly true, but for all that we need not submit to being told that the three words terra, est, rotunda did not exist by themselves till the sentence terra est rotunda had been analysed grammatically.

On the contrary, every noun and every verb was originally by itself a complete sentence, consisting of a predicate and a subject, whether the latter be expressed, as it commonly is in the Aryan languages, or only understood, as in Chinese. Thus Luc-s was originally a real sentence, and meant 'shining-here.' That was enough for a first effort. Luc-e-t, likewise, was a complete sentence, and meant 'he-shining.' No one doubts this with regard to verbs. No one hesitates to call Veni, vidi, vici three independent sentences. Why should we doubt with regard to substantives? The difference between man-u-s (man) and man-u-te (thinks) is no more than between 'thinking-he (there),' and 'he-thinking'? In a later stage of language the two sentences Manus and manute, 'Man and thinks,' were fused into one, and this led to the erroneous supposition that manus and manute had no independent existence, but were from the first integral parts of a sentence.

ON THE SUFFIX TÂTI.

(From 'Mind,' July, 1876.) See p. 232.

Is it not a most striking illustration of the power which language can exercise even on the most vigorous and independent minds, when we see how Mill had persuaded himself that most metaphysical difficulties inherent in the conceptions of Matter and Mind could be removed by declaring[1] that Matter was nothing but the 'permanent possibility of sensation,' Mind nothing but the 'permanent possibility of feeling'? There is a certain want of clearness in thus expressing the opposition between the Ego or Mind and the Non-Ego or Matter, and I doubt if many will approve the use which Mill makes of the words sensation and feeling, restricting the former to a passive, the latter to an active sense. However, a philosopher who modifies thought has a right to modify language, and we have only to remember that Mill, in his dialect, uses the expression 'possibility of sensation,' as applied to the Non-Ego, in the sense of the possibility of being the object of sensations; while 'possibility of feeling,' as applied to the Ego, is intended to convey the possibility of being the subject of feelings.

But what is of much greater consequence is this, that Mill should have imagined he could eliminate, or at least sublimate, the idea of substance, both in the Ego and the Non-Ego, by using an abstract noun, possibility, instead of a concrete noun, the possible, or, as we used to say in our own, half-classical, half-mediaeval dialect, the cause, the substance, the subject.

What is the nature of such words as possibility? They clearly express a quality, and therefore a quality of something. When we speak of a thing as feasible, we mean that it can be done; when we say it is destructible, we mean that it can be destroyed. Afterwards, if we want to speak of many things being feasible or destructible, our language enables us to form new substantives from these adjectives, and to speak of the feasibleness, the destructibility, the possibility of things.

[1] Examination of Hamilton's Philosophy, pp. 198, 206.

Language will even allow us to go a step further, and to say, for instance, there is a possibility of something being done, but it is here that language begins to react on thought and tempts us to speak of possibilities, as if they were things by themselves, and different from the things which are possible.

One of the best known instances of what I call philosophical mythology is the word faculty. From *facere*, to do, was formed *facilis*, easy to do, or easy to be done; e.g. *res factu facilis*, a thing easy to be done; *facilis ascensus*, an easy ascent. *Facilis* means also ready, e.g. *facilis ad dicendum*, ready or quick to speak. From this adjective we have *facilitas*, the quality of being easy, also the quality of being ready. Besides *facilitas*, we also find *facultas*, a word generally represented as a contraction of *facil(i)tas*, but which may be derived direct from the old Latin *facul*. *Facultas* means chiefly the power of doing, e.g. *facultas pariendi*; then the means of doing, supply, resources. In modern languages, however, this word has assumed a much wider development. We speak of the faculty of hearing, the faculty of perceiving, imagining, remembering, reasoning; we speak of the faculties of the mind, and we at last divide these faculties, place them side by side as independent powers, often forgetting that all the time they can claim no subjectivity whatever, that they are no more than qualities of the same subject, and that all we really mean when we say that humanity is endowed with the faculties of seeing, remembering, imagining, and reasoning, is that every man can see, remember, imagine, reason, etc.

It is curious that the very school which has always protested most strongly against the abuse of these abstract nouns, which has waged war to the knife against the faculties of the mind, though not always to the advantage of a clear and systematic treatment of psychology, should in metaphysics fall into this very trap. We can imagine philosophers denying altogether the reality of any such thing as substance; we can understand why Mill looks upon that category simply as the result of custom, not as a *sine quâ non* of human thought. But whatever the origin of our category of substance may be, it is through it and with it alone that we can conceive quality. A quality is inconceivable without reference to a substance,

and however much that original coherence may be forgotten, we always find it is there, whenever we go back to the deepest foundation of our intellectual fabric. We may speak of possibilities, we may trust in possibilities, we may be even frightened by possibilities, but if we look more closely, what we trust in and what we are frightened by are always things possible.

If therefore Mill and his followers imagine that by defining Matter as the permanent possibility of sensation, and Mind as the permanent possibility of feeling, they have removed the difficulty of Kant's *Ding an sich*, they are mistaken. Their possibility of sensation, if properly analysed, means things or substances which can become objects of sensation; their possibility of feeling means things or substances which can become subjects of sensation.

However we may fight against the necessities of our reason, reason has its revenge. It is, for instance, only another attempt at avoiding the admission of something substantial in the Ego, which leads Mill and his followers [1] to define Mind as a series or a succession of feelings. What are series or succession but the germs of collective words, many of which develop into abstract nouns? A series or a succession means

[1] M. Taine in his charming work, *De l'Intelligence*, vol. i. p. 378, expresses the same views in even more determined language: 'Le moi n'est lui-même qu'une entité verbale et un fantôme métaphysique. Ce quelque chose d'intime dont les facultés étaient les différents aspects, disparait avec elles; on voit s'évanouir et rentrer dans la région des mots la substance une, permanente, distincte des événements. Il ne reste de nous que nos événements, sensations, images, souvenirs, idées, résolutions: ce sont eux qui constituent notre être; et l'analyse de nos jugements les plus élémentaires montre, en effet, que notre moi n'a pas d'autres éléments.' What is the meaning of *nos événements*, if not *événements de nous*? and if these *événements* are something real, might we not turn M. Taine's illustration (i. 385), that one cannot hang any but a painted chain on a painted hook, against him by saying that one cannot hang a real series of *événements, sensations, images, souvenirs, idées, résolutions*, on a painted *Moi*!

things succeeding each other, and if these things are feelings, then feeling again is what might be called an adjectival substantive, expressing a quality, *status*, or act of somebody. Leave out that somebody, that substance, that subject, that *x*, and our mind refuses to act, as Mill has been honest enough to admit himself. For, as he says, (p. 212):—

'The thread of consciousness which composes the mind's phenomenal life [another *alias* for the Ego as a substance] consists not only of present sensations, but likewise in part, of memories and expectations. Now what are these? In themselves, they are present feelings, that is of present consciousness, and in that respect not distinguished from sensations. They all, moreover, resemble some given sensations or feelings, of which we have previously had experience. But they are attended with the peculiarity, that each of them involves a belief in more than its own present existence. A sensation involves only this: but a remembrance of sensation, even if not referred to any particular date, involves the suggestion and belief that a sensation, of which it is a copy or representation, actually existed in the past: and an expectation involves the belief, more or less positive, that a sensation or other feeling to which it directly refers, will exist in the future. Nor can the phenomena involved in these two states of consciousness be adequately expressed, without saying that the belief they include is, that I myself formerly had, or that I myself, and no other, shall hereafter have, the sensations remembered or expected. The fact believed is, that the sensations did actually form, or will hereafter form, part of the self-same series of states, or thread of consciousness, of which the remembrance or expectation of these sensations is the part now present. If, therefore, we speak of the Mind as a series of feelings, we are obliged to complete the statement by calling it a series of feelings which is aware of itself as past and future: and we are reduced to the alternative of believing that the Mind, or Ego, is something different from any series of feelings, and possibilities of them, or of accepting the paradox, that something which *ex hypothesi* is but a series of feelings, can be aware of itself as a series.'

Nothing can be more frank and honest; only, instead of saying with Mill that we are here 'face to face with that final inexplicability, at which we inevitably arrive when we read

ultimate facts;' and instead of comforting ourselves with saying, that one mode of stating it only appears more incomprehensible than another, because the whole of human language is accommodated to the one, and is so incongruous with the other that it cannot be expressed in any terms which do not deny its truth,—might it not have been better, if Mill had examined his own language more closely, and asked himself what could be meant by a series, a thread, a succession? A succession of feelings, no doubt, cannot be said or thought to be aware of itself as past or future, but an Ego, a Subject, an *x*, or whatever you like to call it, of which this succession, i.e. these succeeding feelings are qualities or attributes, may well be thought and said to retain a feeling, not for one moment only, but for a longer or shorter time; and the same subject may also, by means of the same retentive nature of former feelings, and by that very law of association which Mill has so fully illustrated, expect one feeling to arise again, whenever another feeling, with which it was frequently connected, has a risen

Language, as I have often said, always revenges herself whenever we do violence to her, or whenever we forget her antecedents. At first sight a series, a succession, a thread may seem a very different linguistic expedient from the termination *tas* which we found in *facultas*, and which is used to form abstract nouns. Yet what was the original purport of such words as *juven-tas*, if not a series, a succession, a class of *juvenes*, and of all things belonging to them? What was *posteritas*, if not a series of *posteri*? What was *civitas*, if not a number of *cives*? The growth of meaning in the derivative *tas*, though long forgotten in Latin, Greek, and Sanskrit, can still be watched, if we have but eyes for the secret cunning of language. Taking *juventas* or *juventus* in its original meaning, succession, thread, class of young men, the Romans could well form such sentences, as *cum omnis juventas, omnes etiam gravioris aetatis eo convenerant*, when the whole youth and also all of maturer age were come together. *Princeps juventutis* would be the chief of their youth, i.e. of all the young men. *Juventas pugnare debet* would mean the young men must fight; *juventas facile decipitur*, young men are

easily deceived, or *credula juventus*, credulous youth. Now in credulous youth, the numerical slowly glides into the more abstract meaning, and so we go on to *tempus juventutis*, the time of youth; *gaudia juventutis*, the pleasures of youth; *robur in juventate*, the strength in young men, or the strength of youth, till at length the abstract conception preponderates; *juventus* becomes all that belongs to youth, and is at last endowed with a new substantival form in the name of the goddess *Juventas*, to whom Lucullus dedicated a temple in the Circus Maximus.

To us the formation of abstract nouns, such as *facul-tas* from *facul*, *juven-tas* from *juven-is*, is so familiar that we hardly think how, at some time or other, the composition of *facul* with what we call the suffix *tas*, or *tâti*, must have been an individual act, performed with a definite purpose. That act took place at a time which escapes chronological measurement; but whenever it took place it must have been a rational act. As long as we know Latin it possesses the suffix *tas*, *tâti-s*; as long as we know Greek it possesses the suffix της, τητ-ος; as long as we know Sanskrit it possesses the suffix *tâti-s*. Therefore, long before Homer, long before the Veda, long before 1500 B.C., *tâti* had become what we call a suffix, i.e. a purely formal element. In 1500 B.C., Sanskrit must have been separated from Greek and Latin for a very long period of time, for the Sanskrit of that time is less primitive in several respects than the Latin of Cicero. Therefore, not only would it be impossible to represent Latin as derived from Sanskrit, such as we know it in the Veda, but it will be necessary to admit that on some points Sanskrit in 1500 B.C. had diverged more from the common Aryan type than Latin had in the time of Cicero. True, no method of calculation will enable us to fix the time when Sanskrit and Latin separated, but I believe that, if on other than linguistic evidence that date were fixed at 10,000 B.C., the student of language would have no difficulty in accepting it. At that remote period the word *tâti*, whatever its origin may have been, must have been used so frequently already as to have assumed a merely formative and formal character, for it is in that formal character alone that we find it in Sanskrit, Greek, and Latin. Before, how-

ever, such a suffix as *táti* became purely formal it must have had an independent and substantial existence. It must have had a meaning, and that meaning, if we could discover it, would reveal to us the first truly historical germ of what we now call the conception of collective and abstract nouns. I am not myself a great believer in that microscopic analysis of grammatical suffixes and terminations with which Bopp and some of his followers have made us familiar. If I am told as a fact that *thas*, the termination of the second person plural in Sanskrit, the Latin *tis*, was originally a composition of *tva-tvi*, thou and thou, what is stated as a fact seems to me to deserve at the utmost the name of likelihood, and even likelihood in such cases seems often to dwindle down to mere possibility. Still the broad principle remains that, whatever is now purely formal in language, must at some time or other have been substantial, though we may admit our inability to trace all formal elements, such as we find them, back to the earlier stratum of language whence they arose. We can easily read the origin of such suffixes in English as *ship* (friendship), *dom* (freedom), *less* (useless), *full* (useful); but when we come to *ness* (ful-ness), or *ish* (foolish), we cannot dig deep enough to reach the soil from which they drew their life.

With regard to the suffix *táti*, Latin *tas*, *tatis*, English *ty*, one of the oldest Aryan suffixes for forming collective, and afterwards abstract nouns, I shall not venture to speak positively as to its original purport. It has been explained by a very distinguished scholar as a combination of two suffixes, *tá* and *ti*, which are used by themselves to form abstract nouns, and the origin of which would probably be referred to a demonstrative pronominal base. But it is curious, to say no more, that Indian grammarians should have derived their suffix *táti* from a root *tan*, to stretch, to extend, thus giving to this abstract suffix that very meaning, viz. stretching, succession, thread, series, which modern metaphysicians now wish to substitute for the collective and abstract nouns in *ty*. It is true, no doubt, that the correct derivative from *tan*, to stretch, would be in Sanskrit *tatis*, with a short *a*, which means a row, a series, a mass, or τασις in Greek, which means tension; but the formation of so ancient a word goes

back to a period far beyond the reach of the grammatical laws of Sanskrit or Greek, and no serious objection to the etymology proposed by native scholars could be raised on that ground.

Without, however, ascribing to that etymology more authority than it deserves, I thought it might be useful to mention it as likely to be of some interest to logicians. If those who follow Mill and share with him his aversion to abstract nouns believe that by using such words as succession, or thread of sensations, they have escaped from the dangerous spell of words in *ty*, they will see that the step from thread, series, succession of sensations to sensibility, or from a collective to an abstract noun, is not so great as they imagine. These words require a peg, and not a painted peg, to hang them on. The expressions thread, series, succession of sensations hang as much in the air as sensibility. To say that the Ego is the permanent possibility of feeling, and that our Mind is but a series of feelings, are both but new translations, different ways of saying that our Mind possesses feeling, or, as we used to say, has the faculty of feeling. Nay, as long as we bear in mind the original purport of collective and abstract nouns in *ty*, it would seem more straightforward and more English to say that the Mind possesses the faculty of feeling than to say that what we formerly used to call Mind or Ego, is 'a series of feelings, aware of itself as a series of feelings.'

CHAPTER VI.

ON THE ORIGIN OF CONCEPTS AND ROOTS.

THE point at which we have now arrived is this. Taking language such as we find it and dissolving it into its constituent elements we can show that both dictionary and grammar are made up of nothing but—

1. Predicative Roots, definite in sound, and expressive of general concepts;

2. Demonstrative Elements, likewise definite in sound, but not conceptual in meaning.

Leaving the demonstrative elements as unexplained, except as possible remnants of an early gesture language in which objects are simply pointed at, but not conceived or described, we now turn to the most important of all questions, viz. How did Concepts arise, those very concepts which are expressed by our predicative roots?

Origin of Concepts, the fundamental question of philosophy.

The question of the origin of concepts, or of the true relation between the singular and the general, is the cardinal question of all philosophy. Feuerbach does not exaggerate when he writes[1], 'The question as to the relation of the species to the individual is the most important and at the same

[1] Vorlesungen über das Wesen der Religion, p. 153; Gerber, Sprache und das Erkennen, p. 210.

time the most difficult question of human knowledge and philosophy. This may be clearly seen from the fact that the whole history of philosophy really turns on it, and that the controversy between Stoics and Epicureans, Platonists and Aristotelians, Sceptics and Dogmatists in ancient times, and again of Nominalists and Realists in the middle ages, and of Idealists, Realists, and Empiricists in modern times always points to this problem. It is one of the most difficult questions, not only because philosophers, particularly the most modern, have by a most reckless use of words introduced infinite confusion into this matter, but also because the nature of language, and the nature of thought itself, which can in no way be separated from language, takes us captive and makes us. 'For every word is general, so that many philosophers see in language itself, as being incapable of expressing what is singular, a proof that the singular and the sensuous is nothing.'

It is impossible in this place to go back to ancient and mediæval philosophy in order to examine the various views propounded on the origin of concepts. But it seems advisable to go back at least so far as Locke and Berkeley and Hume will carry us, who took up this question anew, and on whose reasonings most of what is now held of concepts by historical students of philosophy will be found to depend.

Locke, on general ideas and words.

Beginning with Locke, I have often quoted the passage in which he speaks of general ideas as the distinguishing feature of man. 'This, I think, I may be positive in,' he writes, in his Essay on Human Understanding, bk. ii. c. 11. par. 10, 11, 'that the power of abstracting is not at all in beasts; and that the having of general

ideas is that which puts a perfect distinction betwixt man and brutes, and is an excellency which the faculties of brutes do by no means attain to. For, it is evident, we observe no footsteps in them of making use of general signs for universal ideas; from which we have reason to imagine, that they have not the faculty of abstracting, or making general ideas, since they have no use of words, or any other general signs.'

And a little further on: 'And therefore, I think we may suppose, that it is in this that the species of brutes are discriminated from man; and it is that proper difference wherein they are wholly separated, and which at last widens to so vast a distance. For, if they have any ideas at all, and are not bare machines (as some would have them), we cannot deny them to have some reason. It seems as evident to me that they do, some of them, in certain instances, reason, as that they have sense; but it is only in particular ideas, just as they have received them from the senses. They are the best of them tied up within those narrow bounds, and have not, as I think, the faculty to enlarge them by any kind of abstraction.'

But Locke does not only tell us that man possesses general ideas, and that these ideas are expressed by words, he also tries to explain how man came by such general ideas. In the third book of his Essay concerning Human Understanding (cap. 3. par. 6) he writes: 'The next thing to be considered is, how general words come to be made. For since all things that exist are only particulars, how come we by general terms, or where find we those general natures they are supposed to stand for? Words become general by being made the signs of general ideas; and ideas become general by

separating from them the circumstances of time and place and any other ideas that may determine them to this or that particular existence. By this way of abstraction they are made capable of representing more individuals than one, each of which having in it a conformity to that abstract idea, is (as we call it) of that sort.'

Berkeley, denying the existence of general ideas.

Instead of showing how Locke in this last passage takes really for granted what he promises to explain—for he neither explains how we come into possession of words, or how we can separate from ideas the circumstances of time and place and any other ideas that may determine them to this or that particular existence—it seems preferable to adopt an historical course and to let Berkeley, Locke's immediate successor, criticise these very passages. In one sense Berkeley's great discovery, of which we shall have to speak presently, may seem to have been, if not anticipated, at all events prepared by Locke, where he says that 'words become general by being made the signs of general ideas,' which Berkeley changed into 'particular ideas become general by having a word attached to them.' But Berkeley saw that before speaking of, or inquiring into the origin of general ideas, it was necessary to prove at all events their existence, and in doing this he arrived at the conviction that there is no such thing as a general idea, or, as he sometimes says, an abstract general idea.

In order to understand Berkeley's argument we must keep in mind that with him, as with Locke, idea meant percept, and was therefore always particular. In some places he does not deny absolutely that there are general ideas (which, however,

he prefers to call notions[1]) or universal ideas[2]; what he denies is that there are abstract general ideas[3].

All that we call knowledge consists, according to Berkeley, of 1. ideas actually imprinted on the senses, and they are all particular; or 2. ideas perceived by attending to the passions and operations of the mind; and 3. ideas formed by help of memory and imagination. The spirit, as it perceives ideas, is called the understanding, as it operates about them, the will (i. p. 169). The first and second class are what we call percepts, external, if caused by the senses, internal, if caused by the passions. The third class comprises some of our concepts, only that with us their formation is generally ascribed to the intellect, and not, as here, simply to memory. The former (1 and 2) are sometimes called presentations, the latter representations. In Locke's language, class 1 and 2 would contain Simple ideas of sentient reflection, class 3 Complex ideas. In Hume's language, class 1 and 2 correspond to Impressions, class 3 to Ideas[4], the former more lively than the latter, according both to Hume and Berkeley[5].

'If we will annex a meaning to our words,' Berkeley says[6], 'and speak only of what we can conceive, I believe we shall acknowledge that an idea which, considered in itself, is particular, becomes general not by abstraction, but by being made to represent or stand for all other particular ideas of the same sort. To make this plain by an example,

[1] Berkeley's Works, edit. Fraser, vol. i. p. 146, note 17; p. 230, note 30.
[2] Ibid. p. 147. [3] Ibid. p. 144. [4] Ibid. p. 155, note 1.
[5] Ibid. p. 170. [6] Ibid. p. 144.

suppose a geometrician is demonstrating the method of cutting a line in two equal parts. He draws, for instance, a black line of an inch in length. This, which in itself is a particular line, is nevertheless with regard to its signification general, since, as it is there used, it represents all particular lines whatsoever; so what is demonstrated of it, is demonstrated of all lines, or, in other words, of a line in general. And, as that particular line becomes general by being made a sign, so the name "line," which taken absolutely is particular, by being a sign, is made general. And as the former owes its generality not to its being the sign of an abstract or general line, but of all particular right lines that may possibly exist, so the latter must be thought to derive its generality from the same cause, namely, the various particular lines which it indifferently denotes.'

According to Berkeley therefore we may reason (discourse) about general ideas, or notions as he then prefers to call them, such as length, for instance, without any reference to breadth, but we can never form an abstract idea, but only a particular idea, standing for many other particular ideas. Locke already had admitted that it was difficult to form the general idea of a triangle, for instance, for it must be neither oblique nor rectangle, neither equilateral, equicrural, nor scalene, but all and none of them at once[1]. Berkeley, however, went further. He denied altogether the possibility of such general ideas, and declined 'to even dispute with any man who pretends to have the faculty of framing in his mind such an idea of a triangle.' (Works, vol. i. p. 146.)

[1] Essay concerning Human Understanding, iv. 7, 9.

After showing that the process of abstraction, as described by philosophers, has no real existence except in the schools, that no man ever takes the ideas of Peter, and James, and by leaving out their stature, the colour of their hair and eyes, and all that is peculiar to each, arrives at the idea of man, Berkeley proceeds to show that if there had been no such thing as speech or universal signs, there would never have been any thought of abstraction at all. To a certain extent this had been foreseen by Locke when he says that 'general names are necessary, if not to the being, yet at least to the completing of a species[1].' But Berkeley speaks far more decidedly. That there ever was such a thing as an abstract idea to which a name was to be attached, he stoutly denies, and if we take idea in the sense in which he takes it, we cannot but admit that he was right.

Berkeley's account of abstraction.

If we take abstraction, ἀφαίρεσις, in its original sense, then Berkeley too has nothing to say against it. In paragraph 10 he says[2]: 'I find indeed I have a faculty of imagining or representing to myself the ideas of those particular things I have perceived, and of variously compounding and dividing them. I can imagine a man with two heads, or the upper parts of a man joined to the body of a horse. I can consider the hand, the eye, the nose, each by itself abstracted or separated from the rest of the body. But then, whatever hand or eye I imagine, it must have some particular shape and colour. Likewise the idea of man that I frame to myself must be either of a white, or

[1] L. c. iii. 6, 39.

[2] Introd. to Treatise concerning the Principles of Human Knowledge, ed. Fraser, vol. i. p. 142, and p. 158.

a black, or a tawny, a straight, or a crooked, a tall, or a low, or a middle-sized man.'

In all this Berkeley is perfectly right; and though in his manner of accounting for the origin of what people in his time called abstract ideas he seems to me to go utterly wrong, yet this is simply due to his not having the guidance of the Science of Language. With that reservation, his remarks are excellent, and would deserve even now to be written in letters of gold on the title-page of every book on the origin of general ideas. No one saw more clearly than Berkeley that the source of a belief in abstract general ideas must be discovered in language. 'If there had been no such thing as speech,' he writes, 'or universal signs, there never had been any thought of abstraction[1].' And again[2]: 'It is found an impracticable thing to lay aside the word, and retain the abstract idea in the mind.'

According to Berkeley, then, 'what we call abstract general ideas are nothing but particular ones, to which a certain term has been annexed which gives them a more extensive signification and makes them recall upon occasion other individuals which are similar to them.'

It is so difficult to give an accurate account of Berkeley's views without using his ipsissima verba, that I subjoin here a few of his classical passages :—

'Locke asks, "Since all things that exist are only particulars, how came we by general names?" His answer is: "Words become general by being made the signs of general ideas." To this I cannot assent, being of opinion that a word becomes general by being made the sign, not of an abstract general idea, but

[1] Works, vol. i. p. 149. [2] Ibid. vol. i. p. 153.

of several particular ideas, any one of which it indifferently suggests to the mind[1].'

'By observing how ideas become general, we may the better judge how words are made so. And here it is to be noted that I do not deny absolutely there are general ideas, but only that there are any abstract general ideas; for, in the passages we have quoted wherein there is mention of general ideas, it is always supposed that they are formed by abstraction, after a manner set forth in sections 8 and 9. Now, if we wil annex a meaning to our words, and speak only of what we can conceive, I believe we shall acknowledge that an idea which, considered in itself, is particular, becomes general by being made to represent or stand for all other particular ideas of the same sort[2].'....

'It is agreed on all hands that the qualities or modes of things do never really exist each of them apart by itself, and separated from all others, but are mixed, as it were, and blended together, several in the same object. But, we are told, the mind being able to consider each quality singly, or abstracted from those other qualities with which it is united, does by that means frame to itself abstract ideas. For example, there is perceived by sight an object extended, coloured, and moved: this mixed or compound idea the mind resolving into its simple, constituent parts, and viewing each by itself, exclusive of the rest, does frame the abstract ideas of extension, colour, and motion. Not that it is possible for colour or motion to exist without extension; but only that the mind can frame to itself by abstraction the idea of colour exclusive of ex-

[1] Introduction to Principles of Human Knowledge, § 11.

[2] L. c. § 12.

tension, and of motion exclusive of both colour and extension[1].'

'And as the mind frames to itself abstract ideas of qualities or modes, so does it (it is thought), by the same precision or mental separation, attain abstract ideas of the more compounded beings which include several coexistent qualities. For example, the mind having observed that Peter, James, and John resemble each other in certain common agreements of shape and other qualities, leaves out of the complex or compounded idea it has of Peter, James, and any other particular man, that which is peculiar to each, retaining only what is common to all, and so makes an abstract idea wherein all the particulars equally partake—abstracting entirely from and cutting off all those circumstances and differences which might determine it to any particular existence. And after this manner it is said we come by the abstract idea of man, or, if you please, humanity, or human nature; wherein it is true there is included colour, because there is no man but has some colour, but then it can be neither white, nor black, nor any particular colour, because there is no one particular colour wherein all men partake. So likewise there is included stature, but then it is neither tall stature, nor low stature, nor yet middle stature, but something abstracted from all these. And so of the rest. Moreover, there being a great variety of other creatures that partake in some parts, but not all, of the complex idea of man, the mind, leaving out those parts which are peculiar to men, and retaining those only which are common to all the living creatures,

[1] L. c. § 7

frames the idea of animal, which abstracts not only from all particular men, but also all birds, beasts, fishes, and insects. The constituent parts of the abstract idea of animal are body, life, sense, and spontaneous motion. By body is meant body without any particular shape or figure, there being no one shape or figure common to all animals, without covering, either of hair, or feathers, or scales, etc., nor yet naked: hair, feathers, scales, and nakedness being the distinguishing properties of particular animals, and for that reason left out of the abstract idea. Upon the same account the spontaneous motion must be neither walking, nor flying, nor creeping; it is nevertheless a motion, but what that motion is it is not easy to conceive.

'I readily agree with Locke that the faculties of brutes can by no means attain to abstraction. But then if this be made the distinguishing property of that sort of animals, I fear a great many of those that pass for men must be reckoned into their number. The reason that is here assigned why we have no grounds to think brutes have abstract general ideas is, that we observe in them no use of words or any other general signs; which is built on this supposition—that the making use of words implies the having of general ideas. From which it follows that men who use language are able to abstract or generalise their ideas[1].' . . . .

Hume on general ideas.

Hume, as we saw, calls this 'one of the greatest and most valuable discoveries that has been made of late years in the republic of letters[2],' and there is no doubt that it

[1] L. c. § 11.

[2] Hume's Treatise on Human Nature, ed. Green, vol. i. p. 325.

marked a considerable advance in the progress of philosophic thought. If all ideas are, as Hume holds, but weaker impressions, we can have neither impressions nor ideas of anything that does not exist. Now a triangle in general, which has no precise proportion of sides and angles, cannot exist, neither can we have any impression of it, whether lively or weak. But we can call one figure possessing three angles a triangle, and we can then use that name for every possible triangle, whatever its peculiar features may be. Thus 'triangle' becomes a general term, and is supposed, though wrongly, to express a general abstract idea. The word when heard raises up an individual idea, along with what Hume calls a certain custom.

The result therefore obtained by the combined efforts of Locke, Berkeley, and Hume is this, that a general is nothing but a particular idea annexed to a general term, that is, to a term which, from a customary conjunction, has a relation to many other particular ideas and readily recalls them in the imagination [1].

Later philosophers. Mansel.

If in tracing the various views held by modern philosophers on the origin of concepts I do not go beyond Locke, Berkeley, and Hume, it is because I doubt whether any real advance has been made beyond the point which they have reached. On the contrary, when we see how recent philosophers of recognised authority explain the process of representative consciousness, it would seem that there had been retrogression rather

[1] L. c., p. 330. Was something like this in Aristotle's mind when he said, *ἀδύνατον νοεῖν ἄνευ φαντασίας* (431 a. 17, 449 b. 30)?

than progress, and certainly an inexcusable ignoring of what those three great thinkers had achieved. Thus Dr. Mansel describes that process as if Hume had never written his Treatise on Human Nature, and as if all difficulties which he and his predecessors tried to grapple with had altogether vanished. 'The mind,' he says, 'recognises the impression which a tree makes on the retina of the eye; this is presentative consciousness. It then depicts it. From many such pictures it forms a general notion, and to that notion it at last appropriates a name. These three acts together constitute thought, or representative consciousness.'

How different is this assurance from the careful and timid steps with which Locke, Berkeley, and Hume approached this most difficult of all philosophical problems!

Whence words as signs of ideas?

But though we may admire the keen observation and scrutiny which Locke, Berkeley, and Hume in succession applied to the workings of their own minds when engaged in the production of general abstract ideas, rightly or wrongly so called, we cannot help wondering that in their solution of the problem they should have overlooked the question, whence come those terms which are applied at first to particular, and afterwards to what are called general ideas? How is it that when I see Peter I call him man, and when I see James I call him man, till at last I call thousands and millions not by the name of Peters and James's, but by the same name of man, or in the plural men, and speak of mankind as comprehending all that can be called man? Unless this can be explained, unless we can account for that curious instrument, the word,

by which a particular is raised into what is called a general idea, we should really have gained very little by what Hume calls one of the greatest discoveries in the republic of letters.

Berkeley was bold enough to declare that the process by which the schools suppose that abstract ideas were formed is pure imagination, 'that no man ever takes the ideas of Peter and James, and by leaving out their stature, the colour of their hair and eyes, and all that is peculiar to each, arrives at the idea of man.' No honest thinker will deny that, for no one will ever catch himself performing that process.

And yet we all possess something which we call abstract ideas and abstract terms. We know that 'John' is different from 'man'; that 'John,' or 'John Knox,' is the name of one individual only, while 'man' is applicable to a great many individuals.

How children learn words.

Now if we ask ourselves, how we ourselves came to the general idea and the general term man, the answer is easy enough. We learnt the name as children; we received it ready made, we did not make it. Something was pointed out to us as man, and we said man at first of one individual, and afterwards of other individuals who were like the first man. Thus what at first denoted one individual, denoted in time a great many similar individuals. But the connotation of the term and the sphere of the idea were originally extremely vague. To many a child man would connote beard, or wearing of spectacles, or wearing of trousers. That man should connote rationality or sex or age would be far beyond a child's horizon. Still all these attributes will in time be included

under the name of man, till at last the child, having himself grown into a man, gets a complete connotation or perfect definition of the word man.

How men formed words.

All this has been explained over and over again, but with all this the real question has hardly been touched, namely how the word man was first formed, and how from the very first it was formed as a general term. This question can be answered by the Science of Language only, which shows us that in forming the word man-u-s, man, our ancestors combined the root MAN, to measure, to think, in its secondary form man-u, with a demonstrative element s, expressing thereby no more than 'think-here.' This was a proposition, at first a singular proposition, but being capable of being repeated and applied to many individuals, of every one of whom it could be said 'think-here,' it would naturally become a general proposition. The word manu-s being repeated, or, by an abbreviated process, being put in the plural, manu-as, would ipso facto become a general term, but a general term, so to say, of the second degree. Manu-s, in the singular, was already a general term, because it predicated an act, which is an attribute. It was not a mere sign, chalked as it were on one person, not an unmeaning proper name, but a predicative name, and as such applicable to all who possessed the same attribute, or performed the same act. It was a general term of the first degree.

Every word was a general term.

If the Science of Language has proved anything, it has proved that every term which is applied to a particular idea or object, unless it be a proper name, is already a general term. Man meant originally anything that could

think; serpent anything that could creep; fruit anything that could be eaten. If therefore, according to Berkeley, these general terms explain the origin of general ideas, what explains the origin of these general terms? Here is the question that has to be solved, or, we should rather say, that has been solved by the Science of Language, and which the Science of Thought has only to utilise. Our own analysis of what passes within us led us to the admission that percepts, concepts, and names, though distinguishable, are inseparable. We arrived, in fact, in our own way at the same conclusion as Berkeley, that concepts are impossible without names, and names without concepts. He said that general abstract ideas by themselves are impossible; we found that concepts, which is our term for what Berkeley calls general abstract ideas, were never realised except in names. But whereas he considered the imposition of a name as simply a kind of second thought, we recognised it as a natural development in the formation of thought.

Words impossible without concepts.

Instead, however, of mere assertion on one side or the other, the true method of solving this problem is the analysis of the only tangible material that is before us, namely the analysis of words, in which alone concepts become realised, or by which, as Berkeley held, singular ideas were juggled into abstract general ideas.

Let us then always remember that in analysing language we found that its constituent elements were predicative and demonstrative roots. This is a fact, not an hypothesis, and it shows us that all words, so far from being, as Berkeley supposed, the

means of forming general ideas, presuppose their existence in the shape of roots.

With the same right with which the native grammarians of India denied the actuality of roots except in words, we may deny with Berkeley the actuality of concepts, except in words. But if roots are the real material of words, and not mere fancies or abstractions, concepts also can no longer be treated as mere fancies or abstractions, but will have to be recognised as an integral phase in the growth of thought from percepts to concepts, and from concepts to words.

Roots express Acts.

All or nearly all the roots of Sanskrit, or rather of the Aryan family in general, express, as we shall see, acts, and more particularly the commonest acts performed by members of a primitive society, such as digging, cutting, rubbing, pulling, striking, platting, weaving, sowing, rowing, marching, etc. So far the study of language had led us, but no further. We must now show that the consciousness of every one of these acts, if only named by a conscious actor, would constitute at once a perfect concept. The root KHAN, for instance, conveys the concept, or the general abstract idea of digging, and the very existence of such a root shows that, at a very early time, the problem of the creation of a concept or a general idea had been solved. It was neither more nor less than the consciousness of a repeated act. But this leaves us still perplexed by the same question which Berkeley also was unable to solve, when he declared that a general abstract idea was nothing but a singular idea with a name attached to it,—namely, whence that name? whence the sound KHAN with which the repeated act of digging is

signed, and by which alone the consciousness of that act is raised into a concept, i. e. a name?

Every kind of attempt has been made to show either how first a concept was formed and then a name attached to it, or how a name was formed first and then attached to a concept; but the conviction became only stronger and stronger that if concepts could not exist without names, neither could names without concepts, and in spite of the most astounding mental gymnastics, no one has yet succeeded in vaulting over this dilemma.

Noiré's Theory of the Origin of Roots.

It was Noiré who first showed clearly the absurdity of all such attempts. So far as I can judge, he has proved convincingly that it is impossible to separate the two questions how concepts are framed and how they are named, for the simple reason, as he had shown, that no concept can be framed without a name, and no name can be framed without a concept. These two questions must therefore be treated as one, and must be answered as one, and it is only by the combined help of the Science of Language and the Science of Thought that we can ever hope for a really satisfactory answer.

If I say that Noiré was the first to propound this view, I only mean that he was the first to show the full importance of it. We live so much in the same intellectual atmosphere that it is almost impossible to say who was the first to discover any new truth. The truth is in the air, and the real discoverer is not he who first gets an inkling of it, but he who perceives and explains the full bearing of it. Nor does the question of priority ever arise among true men of science and seekers after truth.

They rejoice if a new truth is born into the world, they little care by whom. Thus Prantl, the author of the classical Geschichte der Logik, wrote in his 'Reformgedanken zur Logik' (1875, p. 162): 'The thoughtful language of man must not be considered as being composed of a physical body of sound and something conceptual and spiritual, but as an inseparable essential unity. By this view of thought, as a manifestation of a form inseparable from language, the whole articulation and systematic treatment of Logic must be considerably affected.' Nothing could have been a more welcome confirmation of what I had myself maintained for so many years than these words coming from the most competent of judges, the Historian of Logic.

Professor Lazarus also has pointed out that different sounds naturally accompany the earliest occupations of primitive man, and supply the simplest materials of language. Silence, he says, is unnatural. 'Every change which man himself operates in nature, all his working and making, his shaping and creating of tools, weapons and ornaments, is followed by tones. In the formation of speech, creative acts are so important an element by the side of intuition, because the categories of apperception, proceeding from our own formative acts, are subjective, arising from our own personality, and as such opposed to the things themselves[1].' He also explains the intelligibility of these sounds by their being uttered in common by members of the same family or clan[2].

To Noiré, however, belongs undoubtedly the merit

[1] Lazarus, 'Sprache,' in Schmid's Encyclopaedie des Gesammten Erziehungs- und Unterrichtswesens, B. xi. p. 13.

[2] Lazarus, l. c. p. 18.

of having staked his all on the truth or falsehood of this doctrine, and it will therefore be necessary to enter more fully into his philosophical system in order to understand the position which he takes with regard to the problem of the simultaneous origin of concepts and words. Though this will interrupt for a moment the thread of our argument, it will not really turn our interest away from the points at issue. On the contrary, it will teach us a most important lesson, namely, how closely our problem and all the problems of the science of language are connected with the great historical problems of philosophy in general.

Noiré's Philosophy.

What distinguishes Noiré from most living philosophers is his strong feeling for the history of philosophy. There is in all his writings the warmest sympathy with the past, an unbroken consciousness, as it were, of the thoughts of the greatest thinkers of the world, so far as they have determined his own thoughts. He is never anxious to impress us with the fact that his thoughts are quite his own, quite original, and his system quite a new system. He knows too well what has been said before him on the old questions which disturb our own philosophical atmosphere, whether by the ancient philosophers of Greece, or by the schoolmen, or by any of the great leaders of philosophic thought, from Descartes to Kant. He never announces as a new discovery what may be read in every Manual of the History of Philosophy. He never indulges in the excited language of the raw recruit with whom every little skirmish is to rank as one of the great battles of thought. History is to him a long experience, which makes us modest,

tolerant, and averse to all dogma and finality. He knows and feels that the roots of his own system go back to Schopenhauer and Kant, to Leibniz, Spinoza, and Descartes, and it is with a full consciousness of what he owes to every one of his intellectual ancestors that he takes his own position on the high road of philosophic thought. On the tower built up to a certain height by others he rears his own story, and he invites us to see whether it does not command a wider and clearer view than the loopholes of his predecessors. If there is evolution anywhere, it is surely in philosophy, and a philosophy without antecedents is like a tree without roots. To Noiré the historical leaders in metaphysical speculation during the last four centuries are living powers, ever present to his mind, with whom he parleys and whom he honours even when he differs from them.

Descartes.

Thus when he has to define the point from which he himself starts in approaching the great questions of our time, and more particularly the questions of the origin of reason and language, he appeals to Descartes, the founder of modern metaphysics. What separated Descartes from the philosophy of the middle ages and made him the spring of a new stream of thought, was his starting from the subjective side of thought, and assigning to cognition the first place among philosophical problems. He taught us first to ask How we know, before we ask What we know. Every system of philosophy, therefore, which plunges into the mysteries of nature without having grappled first with the mysteries of thought, the system of natural evolution not excepted, is pre-Cartesian and mediaeval.

But Descartes, through breaking the fetters of

many of the traditional ideas of the schoolmen, remained under the sway of others. He remained a Dualist, never doubting the independent existence of two separate worlds, the world of thought and the world of matter. The world of thought was given him in his Cogito, but the world of matter was a world by itself, totally different and apparently beyond the reach of the Cogito. Mind with Descartes was a substance possessed of the property of thinking, using that word in its widest sense, so as to comprehend perceiving, willing, imagining. Matter was a substance possessed of the property of extension, extension comprehending the qualities of divisibility, form, and even motion. What could these two substances have in common? Having put them asunder, how was he to join them again? And, even if he had simply accepted them as joined, how was he to ascertain whether the knowledge which the mind possessed of matter was correct or not?

Descartes' solution sounds strange to our ears, yet it can be translated into modern philosophic thought. He starts with the conception of God which he takes as impressed on his mind, and as his conception of God involves the conception of the most perfect Being, Descartes considers that every possibility of error or phenomenal delusion in the world which God has created is ipso facto removed. This step, which changed the uncompromising subjective scepticism with which Descartes begins his philosophy into an equally uncompromising dogmatism, was influenced no doubt by the theological atmosphere of his time. But we must guard against suspecting in it a concession to the prejudices of his con-

temporaries, or, as many have done, a compromise with his own convictions. Every man, even the freest thinker, is a slave to the language in which he has been brought up. He may break through some of its trammels, never through all, and to ascribe dishonesty to Descartes, because he based his faith in the truthfulness of our faculties on his faith in God as a perfect Being, is as unfair as to blame Bacon for his fanciful interpretations of Greek myths. If we tried to translate the argument of Descartes into the phraseology of modern philosophy, we might do it in the words used by Dr. Martineau on the truthful character of our cognitions. 'Faith in the veracity of our faculties,' he writes, 'if it means anything, requires us to believe that things are as they appear, that is, appear to the mind in the last and highest resort; and to deal with the fact that they only appear, as if it constituted an eternal exile from their reality, is to attribute lunacy to universal reason. "Trust in God as a perfect Being," and "an unwillingness to attribute lunacy to universal reason," sound very different, but their intention is the same.'

Noiré, though starting from the Cogito of Descartes as what is certain above everything else, deviates from him when he proceeds to cut the subject and object of knowledge asunder, and still more when he attempts to heal that wound by means of his Concursus divinus, which served as a panacea for all ailings both with Descartes and with his followers. One of the most distinguished Cartesians, Malebranche, went so far as to maintain that when our soul perceives, it is not influenced by outward objects, but by God only, calling forth in

the soul the sensations which we ascribe to the action of the material world; nay, he maintained that even when our soul wills, it does not act on the body, but God intervenes to produce the desired effect. This was a kind of Berkeleyism long before Berkeley.

At this point Noiré becomes to a certain extent Spinozistic. The very fact that the gulf between two heterogeneous substances such as mind and matter cannot be bridged over, led Spinoza to suppose that there was no such gulf, that there were not two substances, but one only, of which mind or matter, or rather thought and extension, were the inherent attributes. Body and soul being now regarded as the same substance under two aspects, the problem of body acting on soul or soul on body vanished. Individual souls and bodies were considered as modes or modifications, whatever that may mean, of the one eternal substance, and every event in them as at the same time material and spiritual. Spinoza.

For a part and a very important part of his journey Noiré goes hand in hand with Spinoza, and he carries away with him this permanent truth, that spirit can never be the product of matter (materialism), nor matter the product of spirit (spiritualism), but that the two are inseparable, like two sides of one and the same substance.

Noiré, however, parts company with Spinoza on the very question on which Leibniz diverged from the great monistic thinker, namely, how all existing things, material or spiritual, could be explained as so-called modes of one eternal substance. What are these modes? whence did they arise? what would the eternal substances be without these Leibniz.

modes? Such questions led Leibniz to postulate not one substance, like Spinoza, but an infinite number of individual Monads. Each Monad was supposed to be a universe in itself, and each endowed with the two attributes of thought and force. The two important steps which Leibniz made in advance of Spinoza were, according to Noiré, the recognition of the individual as ultimate, independent, and not derivative, and the recognition of force instead of mere extension.

The escape from the Ἓν καὶ πᾶν is not so easy, however, to those who have once been under its spell, as Leibniz would have us believe. Nor did Leibniz himself by any means shake off the almost irrepressible longing of the human mind after the One, as the source of the Many. At first sight his monads seem to form a real republic of small independent divinities, but not only is there for all of them a 'pre-established harmony,' but in the end his monads are represented as created by one Monad, which itself is not created: that is to say, his Monads cease to be true Monads. There is, as he says, 'une unité primitive ou substance simple originaire dont toutes les monades créées ou derivatives sont des fulgurations continuelles, de moment en moment[1].' Are these fulgurations a very real advance on Spinoza's modes, and is it possible to speak of Monads, and then to represent them as created, that is as dependent and derivative? Let us hear what Noiré says on this point.

'Spinoza's doctrine,' he writes[2], 'received its

[1] Monadologie, par. 47.

[2] Einleitung und Begründung einer monistischen Erkenntnisstheorie, p. 126.

necessary complement through Leibniz. That the Infinite alone exists and can be conceived by itself only, that all single phenomena are throughout dependent on the Eternal and the Infinite, that the true attributes of substances, viz. extension and thought, cannot be given us by experience but must be conceived immediately, that our imaginations misleads us when it attempts to count and measure where, according to their nature, counting and measuring are impossible—all these were precious truths which, difficult to understand, could ripen and bear fruit at a much later time only.'

'The principle of individuality, however, remained entirely neglected in the philosophy of Spinoza. Individual beings are nothing but modifications, affections of the One-and-All, the eternal and infinite God-World. But there can be no doubt that Nature is entirely founded on individuality, and higher knowledge as well as higher reality arises only through the combination of forces which were originally distinct. "Spinoza aurait raison, s'il n'y avait pas de monades." In these words the opposition of the philosophy of Leibniz to that of Spinoza is clearly pronounced.'

What Noiré carries away from Leibniz are the Monads, or, as he prefers to call them, the Mona, leaving the Pre-established Harmony in the same philosophical lumber-room with the Concursus divinus, and pronouncing no opinion on the necessity of admitting beyond all individual monads one supreme or creative Monad, formerly called God.

The Name of God.

It is curious to observe this use of the name of God in the philosophical language of Descartes, Malebranche, Spinoza and his con-

temporaries. When one knows what was the meaning of God, whether as applied to Jupiter or to Jehovah or to the Father, the different meanings assigned to that word by mediaeval and modern philosophers are sometimes rather startling. Descartes, when defining substance as that which requires for its existence the existence of nothing else, cannot help identifying that substance with God.

Again, when speaking of the two created substances, mind and matter, he represents them both as requiring for their existence nothing but God.

When the next question arose, which occupied the thoughts of his immediate successors, Malebranche and Geulinx, namely, how mind can be brought in contact with matter, or know anything of matter, God is again called in. He, on the occasion of every physical process, is supposed to call up a corresponding idea in the mind, and then again, on the occasion of every act of will, to cause a corresponding movement of the body.

This so-called occasionalism was not philosophy, but simply the admission of a miracle. It therefore led to a natural reaction in the philosophy of Spinoza, who denies the possibility of two substances, and admits one substance only, with its two attributes of thought and extension. Now that substance which is infinite, is again identified with God.

With Leibniz God assumes the character of a Monad of which all other monads are continual fulgurations, something very different, it would seem, from the Lord God of Moses, and from God, the Father, of the New Testament. Still every philosopher has, no doubt, the right of defining what he means by God, and it is surprising that a man of Schopenhauer's

philosophical experience should not have seen this. He always argues as if he knew exactly what was meant by that word, though he never tells us; but when other philosophers speak either of the Universe or of Providence as God, he takes them severely to task for predicating of God what cannot be predicated of his God. It would be different if Schopenhauer had simply stated that what Moses meant by Jehovah, or Homer by Zeus, was something very different from what Spinoza, for instance, called Deus. In that case Spinoza would probably have replied that he was quite aware of that, but that he was only declaring what Moses or Homer had been worshipping ignorantly. What they called by the name of Jehovah, Zeus, or God was to them the solution of the same riddle which he tried to solve. They were all using keys, more or less perfect; only every one thought that his key fitted better than any other key. Moses would probably have said to the prophets, that their Jehovah was not his. We know how loudly the Greeks declared that the Zeus of Socrates was not their Zeus. Still the intention was one and the same. And if they retained the old name, what was it more than what Dante did when he said (Purg. vi. 118),—

'O sommo Giove, che fosti in terra per noi crocifisso'?

But let us return to Noiré. Having settled his accounts with Leibniz, he has next to pass through the ordeal of Locke's philosophy, and to defend his Mona from becoming mere tabula rasa, or as we, in these days of photography, should say, sensitive plates. In Locke's philosophy there remained nothing but the perceiving subject as tabula rasa

Locke.

on one side, and on the other the objective world throwing its picture on the blank surface of the soul. Nothing was in the intellect except what had come into it through the senses, and if Leibniz rejoined, No, nothing but the intellect itself, the next question clearly was, What then is the Intellect?

Condillac and Kant.

The answer was given from two opposite quarters, by the philosophers of France and of Germany. Penser c'est sentire was the answer of Condillac, La Mettrie, and Diderot. Kant's answer was the 'Critik der reinen Vernunft,' in which he gave what is the only possible definition of the intellect, namely, the defining and fixing of its true limits. What these limits are according to Kant, is by this time well known to all serious students of philosophy. Man can possess a knowledge of phenomena only; what lies beyond the phenomenal world is beyond his perception and conception. His own sensuous perception is determined by space and time, his mental conception by the categories. These forms of perception and conception are, according to Kant, neither innate nor cognate, but inherent, inevitable, irremovable. They cannot be thought away. They are that without which thought could not be conceived as possible in man. They cannot therefore be the result of thought, but must be antecedent to all thought. They are the laws of sense, the laws of thought, the Sine qua non of all intellectual activity.

Within this charmed circle described by Kant the human intellect is safe; outside it, it becomes embrangled in antinomies or inevitable contradictions. According to Kant we have on one side man, imprisoned within the walls of his senses and with no

more freedom of movement than the categories or the chains of his intellect will allow him; on the other side we have a world of which we know nothing except that it is, and that by its passing shadows it disturbs the repose of our prison.

As for the prisoner, nothing that later philosophers have added has materially altered his position. Space and Time have remained what Kant was the first to prove them to be, necessary forms of our sensuous intuition. The number of the categories has been criticised; Schopenhauer, in particular, tried to prove that we need not admit more than one, the category of causality, as the one primary form of all human thought. But whether as primary or secondary forms of thought, they still remain as Kant established them, whether as the chains or as the wings of the human mind.

So much about the subject or the Monon. What now about the objects or the Mona? Schopenhauer. According to Kant we can know nothing of them as they are by themselves, for the simple reason that to know does not mean to know things as they are by themselves (Ding an sich), but as they are to us. Dissatisfied with this conclusion, later philosophers, such as Fichte, Schelling and Hegel, have tried hard to establish the possibility of absolute knowledge, but after years of hopes and illusions, the philosophical world seems now to have returned again to the more humble but impregnable position which Kant occupied. The only real progress beyond Kant is that made by Schopenhauer, and accepted by Noiré. According to Schopenhauer, our only knowledge of anything existing outside us is derived from our knowledge of the existence of our Self, and that involves

not only being, but conscious being, resisting, or, as he prefers to call it, willing. If therefore we say that the Non-Ego or the Ding an sich exists, we say at the same time that it exists as something willing, resisting, and, if not actually, at least potentially, conscious. We know no other kind of being, and therefore cannot predicate any other. As we are to others so others must be to us; the Non-Ego like the Ego, the Ego like the Non-Ego. This is Schopenhauer's position which Kant might well have accepted without any further change in the structure of his system, which Noiré accepts, and which, with certain modifications, I myself accept all the more willingly, because, as we shall see, it was borrowed by Schopenhauer from the philosophy of the Veda.

The Monon and its two attributes.

After Noiré, in following the development of philosophic thought through the last four centuries, has thus arrived at his Mona, he no longer asks, What is matter? and, What is intellect? but, What is essential in order to explain the whole of the subjective and objective evolution of the world? Like Descartes, like Spinoza, like Leibniz, he requires two attributes only, but he defines them differently from his predecessor, namely, as motion and sensation. Out of these materials he builds up his universe, or rather, taking the universe as he finds it, he traces it back through a long course of evolution to these simple beginnings. As Goethe said, 'No spirit without matter, no matter without spirit,' Noiré says, 'No sensation without motion, no motion without sensation.'

According to these two attributes, philosophy has to deal with two streams of evolution, the subjective and the objective. Neither of them can be said to

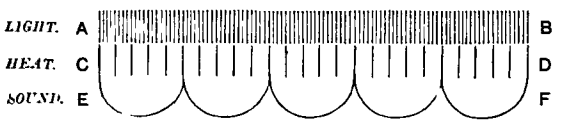
be prior. On the one hand it may be said that motion precedes sensation, because it is motion that causes vibration, and vibration of a conscious monon is sensation. I see, I hear, I feel, I taste, I smell, all these, translated into the highest and most general language, mean I am set in motion, I vibrate. But, on the other hand, motion can only be said to exist really, where there is sensation of it. It presupposes sensation, for it means something which is nothing except in relation to something else, and that something else capable of perceiving. The two streams of evolution run parallel, or, more correctly, the two are one stream, looked at from two opposite shores.

Subjective Evolution.

Taking the subjective aspect first, Noiré shows how sensation begins in its lowest form, as a mere disturbance or irritation. But every quarrel requires two people, and thus even this irritation presupposes something that reacts against something else, some force which is conservatrix sui. It is that power of reacting against foreign disturbance and not being simply pushed aside by it or annihilated, that constitutes the beginning of all sensation. Sensation arises in fact from motion and conscious reaction.

If we define every kind of sensation as conscious reaction or vibration, we are enabled by the discoveries of physical science to determine the different kinds of sensation by the number of vibrations acting within a given time on certain specially receptive organs. Let the line A B represent the $\frac{1}{1000}$ part of a second, let each straight line (|) represent 4,000,000,000 vibrations, and each curved line (∪) one vibration. Then, disturbed and set to vibrate

in unison with these vibrations, the eye within this $\frac{1}{1000}$ part of a second would see red, the skin would perceive about 31° of heat (Centigrade), and the ear would hear the tone of e''''''.[1]



While one Monon thus maintains itself against the inroads of another, or in reality of an infinite number of Mona, it vibrates. It asserts itself by vibration, i. e. by a constant and regularly repeated attempt to maintain itself against foreign inroads. Vibration in the highest sense is a struggle for existence, a struggle between being and not-being. While one Monon has for one moment to yield, and as it were to surrender some of the space which belonged to itself, it recognises in the very act of yielding the existence of something else, able to disturb, but unable to annihilate; so that when we say of something that it exists, what we really mean is that it resists, and that for a moment it is where we were before, while our own existence is proved by our recovering the ground which for a moment we had lost.

And here begins the first glimmering of what is called the category of causality, better perhaps the category of objectivity. It is true that a vibration by itself tells nothing of an object, but we are so constituted that we must look upon every vibration, not simply as a status, but as caused by

[1] Cf. Noiré, Grundlegung, p. 50.

something; and by fixing that something outside ourselves we translate disturbances, irritations, or vibrations into the perception of a cause or of an object. This shows that no perception can be entirely passive, as many philosophers supposed, to whom perceiving was simply suffering or being passive. Thus Malebranche said: 'In the same manner as the faculty of receiving different figures and configurations in the body is entirely passive, and involves no action whatever, the faculty also of receiving different ideas and different modifications in the mind is entirely passive, and involves no action whatever. I call this faculty, or this capacity which the mind possesses of receiving all those things, the understanding (l'entendement).' We hold, on the contrary, that every impression is received and perceived by our resistance, and every resistance is naturally active, and, on the part of a self-conscious Monon, self-conscious. We suffer, no doubt, in seeing and hearing, but we suffer because we are able to resist.

With this sensuous, but not entirely sensuous, perception begins, according to Noiré, that subjective evolution of thought, from the lowest to the highest point, which forms the chief part of his philosophy.

Objective Evolution.

We need not dwell here on his views on objective evolution, though they contain many suggestions which the followers of Darwin would find extremely useful. Schopenhauer, as is well known, expressed a strong aversion to the theory of evolution when in Germany it tried to pose as real philosophy. 'What has philosophy to do with becoming?' he wrote; 'it ought to try to understand being.' Noiré, however, is a thorough Darwinian in principle, though in detail he follows Robert Mayer

rather than Charles Darwin. He looks upon the struggle for life, the old πόλεμος πατὴρ πάντων, the bellum omnium contra omnes, on the survival of the fittest, on natural selection, influence of environment, as important, but only concomitant agencies, while he places the true source of evolution in what he, with Schopenhauer, calls the Will, i. e. the subjective form of what, when it appears objectively, we call Force. He holds with Mayer, and with Kant, that there is but one force of Nature under different forms, itself eternal and unchangeable, and he recognises in whatever we perceive, that is, in all that we know of nature, whether in the form of light, heat, sound, or anything else, nothing but variations of motion. That motion may be changed, but it can never be lost. Everything in nature, even organic life, is looked upon as a purely mechanical process, though it is fully admitted that Science has not yet mastered the most difficult of all problems, the explanation of life as a mechanical process.

But while we may leave Noiré's views on objective evolution, which he expounds under the title of Kinetics, to be examined by the students of physical science, we have now to see how he treats the problem of subjective evolution to which he assigns the title of Aesthetics.

Materials for the study of subjective evolution, or Aesthetics.

For the study of Kinetics the field is immense; it is the whole realm of nature, from the first motion of an atom to the revolutions of the solar system, from the formation of the first cell to the birth of a human being. Here everybody who has eyes to see may see and work. Experience and experiment are the two tools, nature the never-failing material, for

those who want to work out the problem of evolution in the objective world.

But where is the material for the study of Aesthetics? Where are the documents in which to study the growth or history of the sentient subject? Must we be satisfied either with introspection, the most uncertain of all vivisectory experiments, in which he who dissects is at the same time he who is being dissected? Or can we hope to find all we want in that short period of growth which we call the history of the world, comprising no more than a few thousand years, filled with names of kings and battles rather than with an account of the silent growth of the mind? No wonder that men accustomed to deal with facts and to base their theories upon them, should turn away with dismay from mental science in which facts are so scanty, and almost every fact can be disputed, and that a study of subjective evolution should seem to become more and more hopeless the greater the achievements in the study of objective evolution.

Language, as Subjective Nature.

And yet while philosophers complained about the scarcity or total absence of trustworthy materials, there were old archives brimful of them, if people would only see them, open them, and read them. We often wonder how people could have been so blind as not to see that the history of the earth was to be read in every bit of coal, and in every flake of flint; and yet all mental philosophy has hitherto been struck with the same blindness. Noiré is in fact the first philosopher by profession who has perceived what students of the Science of Language, more particularly Geiger, had pointed out again and again, that the oldest archives of the

history of the mind are contained in language, that language is the embodiment of mind, and that in the innumerable languages of the human race the students of mental science may find materials as rich and as real as any that nature supplies to the student of physical science. Nor have we only the surface of the living languages of the day in which to study the last results of that unbroken growth which begins with the first conscious sensation. We possess in the so-called dead languages petrifactions of former stages of that growth, and we can discover by a careful analysis the very cells of thought in the roots shared in common by the great families of speech. The true history of the human mind is the history of language; the true philosophy of the human mind, true because resting on facts, is the philosophy of language.

It is surprising that neither Descartes nor Spinoza should have had any suspicion of this, and should never have tried to reason out the true relation between language and thought. We might have expected that Descartes would have treated words as material sounds, as mechanical productions running parallel with the ideas of the mind, neither provoking ideas nor provoked by them, but fulfilling their purpose simply by a kind of concursus divinus. But instead of that, he simply repeats the views then current, 'that if we learn a language, we join the letters or the pronunciation of certain words, which are material, with their meanings, which are thought; so that whenever we hear the same words again we conceive the same things, and when we conceive the same things the same words recur to our memory[1].'

[1] Epist. i. 35: 'Sic quum linguam aliquam addiscimus, literas

Neither does Spinoza return a more satisfactory answer as to the mental relation between language and thought, and we look in vain for any passage in which he might have attempted to bring the facts of language into harmony with his general system of philosophy. He distinguishes in one place very clearly between ideas or concepts on one side and images or percepts and words on the other. But it is again the old story. Words are there to signify things [1], but how they came to be there and to perform the office of signifying things is never even asked. In another place, words and images are said to consist in corporeal movements which have nothing to do with the concept of thought. Once Spinoza asks himself the question how, on hearing the sound of pomum, a Roman thought of what had no similarity whatever with that sound, viz. an apple; and the answer is, by the concatenation of ideas. 'The body,' he says, 'has frequently been affected at one and the same time by the sound of pomum and by the sight of an apple, and hence, on perceiving the sound of pomum, it recalls its frequent or constant concomitant, the apple [2]. The question whence that sound of pomum originally came, and whence its first concomitancy with an apple, is never asked by Spinoza, though it would seem to be the

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sive quarundam vocum, quae materiales sunt, pronunciationem conjungimus cum earum significationibus, quae sunt cogitationes, ita ut auditis iterum eisdem vocibus easdem res concipiamus, atque eisdem rebus conceptis, eaedem voces in memoriam recurrant.'

[1] Ethica, ii. prop. xviii, schol.: 'Verba quibus res significamus.' Ibid. 'Verborum namque et imaginum essentia a solis motibus corporis constituta, qui cogitationis conceptum minime involvunt.'

[2] Ethica, ii. prop. xviii.

most natural of all questions. One remark only shows that his thoughts must have dwelt on the difficulties of language. In one passage he compares words with footprints, and remarks that when a soldier sees the footprints of a horse, he thinks of cavalry and war, while the peasant who sees the same marks is carried away in his thoughts to the plough and the field. This shows an advance beyond the then current views of the purely conventional character of language, and some apprehension of the fact that words imply far more than they express.

Noiré does full justice to Leibniz, not because that philosopher seemed to him to have solved the problem of the relation between language and thought, but because he was the first to point out that, as in every other part of nature, so in language, it was the inductive method alone that could lead to any valuable results. Before attempting to find out how language arose, Leibniz knew that we ought first of all to collect, classify, analyse, sift, and label all that there is of language. This conviction led him to collect living dialects, to bring to light the earliest documents of his own language, to encourage Emperors as well as Missionaries to help in the compilation of dictionaries and grammars of hitherto unknown languages [1]. It was in this way that Leibniz may indeed be considered as the founder of the Science of Language, as an inductive science. It was in this way also that he was led to conceive the possibility of a more perfect, or so-called universal, philosophical language. But the question whether thought was possible without language, or language

[1] See before, p. 43, and Lectures on the Science of Language, vol. i. p. 158.

without thought, never struck him as the vital question of all philosophy.

At the same time, when Leibniz was laying the foundations of Comparative Philology, Locke threw out his very pregnant remarks on the true nature of language, remarks which were little heeded at the time, but which have of late received the fullest confirmation from the Science of Language[1]. In his great, though very unequal work, 'On the Human Understanding,' he pointed out that words were never the signs of things, but that in their origin they were always the signs of concepts; that language begins in fact where abstraction begins, and that the reason why animals have no language is that they do not possess the power of abstraction[2]. I call this observation of Locke's most important, because we see in it anticipated what has now been fully confirmed, namely, that every word in every language which has ever been carefully analysed, is derived from a root, and that every root expresses a concept. To my mind the coincidence of Locke's observation with the discoveries of Comparative Philology was like a new revelation. Locke's work, in spite of all its imperfections, is, as Lange in his 'History of Materialism' rightly perceived, a 'Critique of Language,' and together with Kant's 'Critique of Reason' it forms the true starting-point of modern philosophy.

Noiré's previous view of Language.

We now return to Noiré's attempt to answer the two questions, How concepts arose and how they were embodied in sound, which he had shown to be in reality one question only, namely, What is the origin of roots?

[1] Lectures on the Science of Language, vol. i. p. 405.

[2] See before, p. 80.

Darwin's theory of Language.

But before we enter on a consideration of Noiré's final view on the origin of language, it is but fair to state that he was formerly a strong supporter of what is known as Darwin's theory of the origin of language, a theory which he had worked out for himself long before the appearance of Darwin's 'Descent of Man.' 'The first human sound,' he wrote in his Welt als Entwickelung der Geistes, 1874, p. 255, 'which deserves the name of word cannot have differed from the warning calls of animals except by a higher degree of luminousness in the images which excited and followed these calls. They excited the idea of approaching danger among fellow-men. . . . . I assume that men were held together by the ties of social life in herds or tribes even before the beginning of language. War was the natural state, war against animals of another species and against neighbours of the same species. It is not unlikely that a peculiar sound or watchword united the members of a single tribe (a kind of phonetic totem), so that they could collect by it those who were scattered abroad and had lost their way, or encourage each other while engaged in fight with other tribes. Let us suppose that but once one member of a tribe warned the other members by imitating the watchword of an hostile tribe when he saw the enemy approaching, and we have in reality the origin of the first human word, capable of doing what words have to do, viz. to excite, as they were intended to do, an idea in the mind of cognate and homogeneous creatures.' 'I found afterwards,' Professor Noiré continues, 'that Darwin in his "Descent of Man" had started an hypothesis almost identical with my own. After declaring that he could not

doubt that language owed its origin to the imitation or modification, aided by signs and gestures, of various natural sounds, the voices of other animals and man's own instinctive cries, he says[1]: "As monkeys certainly understand much that is said to them by man, and as in a state of nature they utter cries of danger to their fellows, it does not appear altogether incredible that some unusually wise ape-like animal should have thought of imitating the growl of a beast of prey, so as to indicate to his fellow monkeys the nature of the expected danger; but this would have been a step in the formation of language."

'The difference between my own hypothesis and that of Darwin,' Noiré continues, 'consisted only in this, that I after all saw in the contents of the first sound of language something more natural, more familiar, more human, viz. the hostile neighbours, while Darwin made the wild animal the first object of common cognition.'

A conscientious study, however, of language in its various manifestations, and a critical survey of the results already obtained by the students of the Science of Language, led Noiré to reconsider his previously expressed opinions, and, honest as he always has proved himself to be, to reject them openly when he had found them to be untenable.

'With a little reflection,' he writes, 'it can be seen that such an attempt is utterly impossible, for the objects of fear and trembling and dismay are even now the least appropriate to enter into the pure, clear, and tranquil sphere of speech-thought (λόγος), or to supply the first germs of it.

[1] Descent of Man, vol. i. p. 57.

The same objection applies of course to my own theory.' . . . .

Did Darwin retract his theory?

'And as I recognise the insufficiency of my own hypothesis,' he continues, 'it was impossible that the whole philosophical significance of the problem, and the crying disproportion between it and his own slightly uttered guesses, could long remain a secret to the serious and profound mind of Darwin. He too in a clear and considerate confession has admitted the inadequacy of his former views, and I can do no better than quote his last words which dispose of our common phantasmagoria once and for ever: "But the whole subject of the differences of the sounds produced under different states of the mind is so obscure that I have succeeded in throwing hardly any light on it; and the remarks which I have made have but little significance[1]." '

We cannot sufficiently honour the noble spirit that dictated these words, particularly if we compare it with the manner of other philosophers who seem to consider the suggestion that they could ever grow wiser as the greatest insult. Love of truth is better than even the full possession of truth,—and Darwin knew it.

In diverging from his own as well as from Darwin's view of the origin of language, Noiré at

[1] Darwin, Expression of the Emotions, p. 93. I did not see formerly in these words of Darwin's so complete a retractation of his own philosophy of language as Professor Noiré imagined, because Darwin never expressed his disapproval of some of his followers continuing to defend it. I am willing to admit, however, that a philosopher cannot be made responsible for all that his followers say and do, and I know that no one yielded more readily to argument than Darwin.

the same time parted company with Geiger, whose thoughtful works, 'On the Origin of Human Language and Reason,' 1868, and 'On the Origin of Language,' 1869, had formerly exercised a powerful influence on his own philosophical opinions. Geiger too, like Noiré and Darwin, thought that he could discover the first beginnings of language in involuntary interjectional sounds; nay, though he himself so clearly recognised the impossibility of separating reason and language, he nevertheless maintained, as I pointed out before, that 'Language has created Reason, and that before there was language, man was without reason.' It is difficult to understand this statement, and I cannot help thinking that it was meant only as a protest against the received opinion that language is the handiwork of reason, and that, like many other protests, it was expressed in rather too strong language. If he had said that with every new word there is more reason or that every progress of reason is marked by a new word, he would have been right, for the growth of reason and language may be said to be coral-like, nay, even more simultaneous than the growth of corals. Each shell is the product of life, and becomes in turn the support of new life. In the same manner each word is the work of reason, but becomes in turn a new link in the growth of reason. Reason and language, even if we must distinguish between them for our own purposes, are always held together in mutual dependence. By reason we count and name two as one. Having done that, we keep the bundle in our mind or memory both as a concept and as a name, and we go on making new bundles, till our

mind becomes richer and richer, like a dictionary, our reason stronger and stronger by exercise, like a muscle. But it cannot be repeated too often that reason by itself and language by itself are non-entities. They are two sides of one and the same act which cannot be torn asunder, an act which the Greeks alone called by its right name, Logos.

Noiré's explanation of the simultaneous origin of roots and concepts.

In his last works, 'On the Origin of Language,' 1877, 'On the Origin of Reason,' 1882, and 'Logos,' 1885, Noiré begins his argument by pointing out a well-known fact, that whenever our senses are excited and our muscles hard at work, we feel a kind of relief in uttering sounds[1]. He remarks that particularly when people work together, when peasants dig or thresh, when sailors row, when women spin, when soldiers march, they are inclined to accompany their occupations with certain more or less rhythmical utterances. These utterances, noises, shouts, hummings, or songs are a kind of natural reaction against the inward disturbance caused by muscular effort. They are almost involuntary vibrations of the voice, corresponding to the more or less regular movements of our whole bodily frame. They are a relief rather than an effort, a moderation or modulation of the quickened breath in its escape through the mouth. They may end in dance, song, and poetry.

These sounds Professor Noiré thinks, and seems to me to think rightly, possess two great advantages.

[1] This point has been well illustrated by Darwin in his Expression of the Emotions, chap. iv.

Firstly, there are signs of repeated acts, acts performed by ourselves, perceived therefore and known by ourselves, and continuing in our memory as signs of such acts. Now what is the sign of a repeated act but the true realisation of what we call a root embodying a concept, comprehending the many acts as one? These signs are not signs of objects perceived by our senses, for though each blow of an axe may be seen by the eye and heard by the ear, the willed act of striking with the purpose of felling a tree is never perceived by eye or ear. They are not the signs of things, but the signs of our own consciousness of repeated or continued acts.

Secondly, these sounds being uttered from the beginning, not by one solitary individual only, but by men associated in a common work and united by a common purpose, possess the great advantage of being understood by all.

As soon as I became acquainted with these views of Noiré's I saw how natural a solution they offered of a problem which I had long tried to solve in a similar but not exactly in the same manner, and I could not help saying to him Εὕρηκας. Like most true solutions, his theory of the origin of roots seemed to be in harmony with everything else. It was known, for instance, that the primitive or primary roots of the Aryan family of speech expressed mostly acts, and not states, and that most of these acts were such as we might suppose to have been familiar to the inhabitants of cave-dwellings or lacustrian huts, such as digging, cutting, rubbing, pulling[1], striking, platting, weaving, sowing, rowing,

[1] See Chap. v. p. 219.

marching, etc. Noiré's theory would not only explain, but would actually postulate these facts. It would postulate roots expressive of actions, of common or social actions, and lastly of creative actions, that is to say of actions producing in a tangible shape the result which had been intended. With such a root and concept as to dig, for instance, it was possible to name, that is, to know a cave, not as something dark or hollow that came accidentally within the ken of our senses, but as something which men had made with their own hands and with a definite purpose, as something which was what it was meant and made and known to be, as an object of our intellect far more than of our senses.

Again, the old question why animals should have no language, though it had received many answers already, received a new and unexpected answer from Noiré's theory. No one would ascribe to animals creative actions, actions performed with a purpose, and, we must add, with a free choice, and hence animals could not have had signs accompanying and afterward signifying such actions.

Objections to Noiré's theory examined.

But though I felt from the first that there was an element of truth in Noiré's theory, I was by no means prepared to accept it at once as a solution of the whole problem. I felt quite as strongly as others the objections that might be raised, but it was in testing these objections that I discovered more and more the real strength of Noiré's position.

Names of colours.

I asked myself, if the elements of language were nothing but roots expressive of acts, how it would be possible to express, for instance, what we see and hear and taste. How, I said,

are colours to be expressed, such as black, white, blue, yellow, etc. They are not acts in any sense of the word that could be compared with our own acts. Whatever view we take of sensation, we seem passive in receiving the sensations of colour, and the coloured objects seem passive as perceived by us. Noiré's theory, however, comes triumphant out of this dilemma[1]. The name of colour in Sanskrit is varna, clearly derived from VṚ, to cover. Colour therefore was conceived originally as the result of the act of covering or smearing or painting, and not till the art of painting, in its most primitive form, was discovered and named, could there have been a name for colour. Thus Lat. color is supposed to be connected with oc-culere, χρῶμα, colour, with χρώς, skin, etc.[2] Another root for painting and smearing is AÑG. From it we have not only Lat. unguere, to besmear, to anoint, unguentum, ointment, but Sk. ak-tu, ointment, tinge, dark tinge and night, and likewise light tinge or ray of light, Gr. ἀκ-τίς. Here we have the first instance of the uncertainty in the meaning of the names of colour which pervades all languages, and can be terminated at last by scientific definition only.

It is well known that the distinction of colours is of late date[3], that Xenophanes knew of three colours of the rainbow only (πορφύρεον, purple, φοινίκεον, red, and χλωρόν, yellow), that even Aristotle spoke of the tricoloured rainbow (φοινικῆ, red, ξανθή, yellow, and πρασίνη, green), and that Demokritos knew of no more than four colours, black, white, red, and yellow.

[1] Noiré, Logos, p. 260. [2] Curtius, Gründzuge, p. 114.
[3] M. M., Hibbert Lectures, p. 41.

Black and blue are often mixed up together, so are black and brown, nay, even the green grass and the blue heaven are often described as of the same hue in the Indian tongues[1]. Nor need we wonder, if we consider the etymological meaning of these names. In Old Norse blár, blá, blatt, which now means blue, meant originally the livid colour of a bruise. Grimm traces this, and Old High German plâo, Med.-Lat. blavus, Fr. bleu, back to Gothic bliggvan, to strike, and he quotes as an analogous case the Lat. caesius, bluish grey, from caedere, to cut.

Black seems to be connected with the root BHRÅG, which means to shine, and from the same source bleak, A. S. blác, blaec, O. N. bleikr, O. H. G. pleih have been derived with more or less certainty.

From the root GHÆR[2], which means to heat, to melt, to drip, to burn, to shine, we have many words for heat, oven, warmth, brightness, and a whole cluster of names of bright colours, such as hari, harit, harita, harina, all varying between yellow, green, and red, and even white. With these words Lat. helus, helvus, Greek χλωρός, and our own green and yellow may be connected, though the exact process of derivation is doubtful[3]. Possibly to grow meant originally to be green, like vĭreo, to be green, to be fresh, to flourish.

This shows how words the most unlikely to be

[1] Powell, Mythology of North American Indians, p. 23, Report of Bureau of Ethnology, 1881.

[2] Fick, Wörterbuch, p. 69.

[3] See Grimm, Deutsche Grammatik, ii. 42, 632–633, 989; I³. 466; I². 895.

derived from roots expressive of subjective acts can nevertheless be proved to confirm rather than to weaken Noiré's theory.

Names of sounds.

Likewise, that outward sounds which we perceive should be conceived as uttered by agents like ourselves is perfectly intelligible. A hissing, gnashing, crunching noise would naturally be assimilated to the noises which are produced by man himself or by the instruments which he employs.

Names of tastes.

And with regard to tastes, too, we see the same mental process. Sharp is cutting, bitter is biting, hot is burning, mild is rubbed down and smoothed, sour may have meant originally scratching, sweet, good-smelling[1]. In all these cases our sensations were clearly conceived as produced by agents without us. Gall by being called bitter was really conceived at first as a biter, under the influence of what we shall have to treat hereafter as Fundamental Metaphor.

Noiré has likewise met the objection that many activities of sense and mind are not really activities, by showing that anyhow they were conceived as

[1] Sweet seems to be one of the oldest compounds preserved by the Aryan language, provided it consists of su, well, and the root AD, to taste and to smell. Whether this root is connected with AD, to eat, is doubtful. We find svâdú in Sanskrit, ἡδύς in Greek, sua(d)vis in Latin, sûts in Gothic (Curtius, Grundzüge, p. 229; Hübschmann, Vocalsystem, p. 59). AD, following the o class, appears in ὀδ-μή, smell, ὄζω, and in Lat. odor, while, following the a class, it gave svâdu, good-smelling or good-tasting, for smell and taste were long conceived as one sensation. Ἀνδάνω, too (ἔαδα), would have meant originally to smell sweet, to be pleasant, governing the dative; afterwards to please, governing the accusative. Ἥδομαι meant I am in a state of pleasure; ἥδεται, he delights= svâdate. The Sanskrit sud, to taste, and sûd, to impel, to entice, have been traced back to the same root, though the latter doubtfully.

activities by the early framers of language. To see may in many respects be a passive state, yet when it was expressed by vîd in video, and if this vîd is the same as vid in di-videre, then to see was conceived as an act, as the act of distinguishing. So if îksh, to see, comes from aṣ, to attain, it would have meant originally striving to reach, just as intendere becomes in French entendre, to hear.

Roots expressive of Sound.

It has sometimes been hinted that Noiré's theory of the origin of roots was no more than a revival of the interjectional or the Bow-wow theory. If by this were meant no more than that Noiré has given the only right interpretation of the interjectional theory, the remark would be both true and ingenious. But as the two theories now stand, they are not compatible with each other. According to the interjectional theory, a momentary cry of pain or joy became a root expressive of different kinds of internal emotions. According to Noiré's theory, the sounds associated with the repeated social acts of man become roots when expressing the consciousness of these acts.

So far from Noiré's theory including the interjectional theory, it seems to be on the contrary deficient on this very point, in so far as it fails to account for that limited number of roots, if roots they can be called, which owe their origin to mere imitation or repetition of sounds.

It is well known how strongly I have always opposed any attempt at deriving words from mere sounds, whether mimetic or interjectional. That was partly in the interest of accurate scholarship, partly for the sake of accurate reasoning, and I do not think we shall hear again of such derivations as

pudet me, repudio and refuto from fi! German pfui! But nothing that I have said excludes the possibility that a limited class of words, particularly in modern languages, which are meant to express sound by sound, may have been developed directly from imitations of singular sounds, whether uttered by animals or by man. I do not say that such an admission is absolutely necessary, but I cannot bring myself to say that it is wrong on principle. Roots meaning to shout, to sing, to call, etc. form clearly a class by themselves, and they are more numerous, because less generalised, than any other class of roots.

It is quite true that in most cases roots expressive of sound can claim the same origin as all the rest, and we certainly see that there was no difficulty whatever in forming the verbs clamare, ejaculare, sonare or tonare, etc. without having recourse to the imitation of actual sounds. Still I am quite willing to admit that roots expressing sounds stand by themselves. Were it a question of expressing our own act of singing, why should it not be expressed by an imitation of the very sounds which we utter in singing? And when the mere sounds of other creatures or the mere sounds of nature, such as are heard in storm or thunder, had to be expressed, why should it not have been done by an imitation of the sounds which we actually hear? I do not say that this was necessary, because we know that in many cases it was not so. But I cannot bring myself to say, even at the risk of being misinterpreted, that it was not possible.

Nay, I go even a step further. If a phonetic sign was required, not for the singing of one bird only, but of a number of

Phonetic Compromise.

birds, or of all birds, some kind of phonetic compromise may well have taken place. In that case the special note of any single bird would have had to be avoided as misleading, and only by dropping what is distinctive of any special bird would it have become possible to arrive in the end at some root expressive of singing in general. This de-specialising process has been traced in other spheres of language. So long, for instance, as people talk of sheep as sheep, and of cows as cows, it has been said that they may well indicate, though not name, the former by baa, the latter by moo. But when a want was felt of speaking of a whole flock, neither baa nor moo would then have answered the purpose. If the flock consisted of sheep and cows only, some such combination as baa-moo (like suovetaurilia and solitaurilia) might have answered. But when more animals were included, their special sounds were exactly those that had to be most carefully avoided, and some compromise would have had to be made to express the general concept of flock. Though I have often given my reasons why neither baa nor moo deserve the name of language, it is not impossible that by mere juxtaposition of two such sounds as baa and moo an approach towards some kind of concept might have been made. If there is, for instance, a sign for father and another for mother, then a mere combination of the two would give us the concept of parents. Thus in Chinese, father is fú, mother mù, but fú-mù means parents. Again, a biped with feathers in Chinese is 'kin, a quadruped with hair is sheu, animals in general are called 'kin-sheu. Light, is 'king, heavy, ćúng, 'king-ćúng is use to express the concept of weight.

In the Aryan languages we have nothing exactly like this, but we have analogous formations in mâtâ-pitarau, sometimes even pitarau, lit. the two fathers, i. e. the parents, or dyâvâ-*p*ṛ*th*ivî, heaven and earth, sometimes dyâvâ (day and night)[1]. This process of combining single signs cannot, however, be carried on ad infinitum. We may call our parents 'father-mother,' but we could not possibly go on and form a name for family on the same principle.

Without therefore committing myself to this theory of Despecialisation, as applied to the origin of certain roots expressive of sounds, I am willing to admit that it is conceivable, if restricted to this one class of roots which are meant to express sound by sound. Nor would this one exception invalidate the general principle that all real roots were originally conceptual, and their sounds derived from the sounds which we utter in performing certain acts.

An instance may perhaps make it clearer what is meant by this process of despecialisation. Though I confess that in the eyes of a scholar it must seem fanciful, yet we know that the ways of language are often fanciful, and as a purely hypothetical instance it can do no harm. If the call of the cuckoo was simply imitated, it would probably have sounded like our own cuckoo, in the Greek κόκκυ. From this κόκκυ the Greeks formed a verb κοκκύζειν, as from οἴμοι they formed οἰμώζειν, οἰμωγή, and from αἰαῖ, αἰάζειν and αἴαγμα. The substantive κόκκυξ, cucûlus, and the Sanskrit kokila may also be considered as being based on a direct imitation of the cuckoo's note.

[1] See Noiré, Logos, p. 230.

But besides the name of the cuckoo, that of the cock too seems to have been formed in much the same way. We find in Sanskrit kukkuṭa, cock, and by the side of it, kukubha, as the name of another bird, possibly a pheasant, while in Greek we have κουκούφας, as the name of the hoopoe, and in Latin cucubare, to cry like an owl, in Lithuanian kukauti, to cry like an owl or like a cock. All these we must class as imitative words, imitative of the special notes of certain birds. If then a necessity arose of expressing, not those notes of special birds, of the cuckoo, the cock, the pheasant, the hoopoe, the owl, but of birds in general, it is clear that neither κοκκύζειν nor cucubare would have suited, not even the Lithuanian kukauti, though this seems to have been already despecialised to a considerable extent. Those who believe in this peculiar origin of roots would hold that by dropping the more specific imitative elements, a sound such as ku might have remained, meaning to cry or to sing in general, and being therefore, to all intents and purposes, a root, KU.

If, after this, we consult the list of roots preserved by Sanskrit grammarians, we find there three verbal derivatives, kauti, kunâti, and kavate, all meaning to shout or to sing, and presupposing a root KU. An intensive formation kokûyate, κωκύω, means no longer to shout like a cuckoo, but to shout in general. It is perfectly true that no further derivatives of a root KU have as yet been met with in Sanskrit literature, but in the Dhâtupâṭha we find no less than three verbs, ku (ślu), kuṅ (śa), kuṅ (śaṇ), all with the sense of making a noise. In other Aryan languages, too, a root KU

has been admitted by Fick and others. Whether a word like κύ-ων, dog, should be derived from that root, is another question. It might no doubt have been meant for the noisy or barking animal, but it might also have been derived from another root. If κύων had been derived from KU, to make a noise, then κῦ-μα, wave, may originally have been intended, not for the swelling (SU), but for the roaring waves. Dogs and waves were certainly considered as closely related by the early poets. Scylla meant originally a dog, as we see from σκυλλο-πνίκτης, which is given as an explanation of καν-δαύλης (see Curtius, p. 150). Σκύλαξ, too, and σκύμνος mean a barking dog, and in Old Slav. we have skyča, skyčati, to bark, and kučika, dog. Another argument in favour of admitting a root KU has been drawn from the existence of several parallel roots, such as KUÑG, to rustle, KÛG, to groan, to hum, KUK, KUN and KVAN, all meaning to make some kind of noise. Even KUD, from which kodayati and kundrayati has been supposed to belong to the same kith, but though its reality may seem confirmed by Greek κυδ-οιμός, noise, κυδάζειν, to abuse, Old Slav. kuditi, to abuse, M.H.G. hiuzen, to scold, its meaning in Sanskrit is to lie.

However, I mention all this as an hypothesis only, an hypothesis which I myself should not wish to defend, but which if kept within proper limits, I cannot bring myself to declare as utterly untenable.

Sympathic Roots.

And there is another and even more important concession which, I believe, we may safely make to those who cling to the interjectional and mimetic theories. The sounds which accompany our acts may, no doubt, be called interjectional, but while as interjections they would be no

more than involuntary cries, they may be raised, as has been shown, to the character of roots, i. e. signs or concepts, if repeated and used with a purpose, namely with the purpose of reminding ourselves and others with us of acts which we perform together again and again, and which therefore we know and comprehend.

It has been argued, therefore that other sounds also which we utter, not so much for the purpose of imitation, but from a kind of sympathy and because we cannot help it, may likewise be raised to the level of roots, if they are repeated and used to remind ourselves and others of the sensations which elicited them from time to time. If, for instance, we see a stone fall or hear a tree struck by lightning, the cries which escape ourselves and all around us are in their nature hardly different from those which we utter under the strain of great muscular efforts. I do not see therefore why we should resist the conclusion that, within this strictly limited sphere, such sounds may have followed the same course as other sounds on which we chiefly rely for the formation of our roots.

It may be well to illustrate this theory also by an example. It is supposed that the sounds elicited by the swift motion or the sudden falling of stones, trees, leaves, rain, hail, waterfalls or thunderbolts, some simply expressive of terror, others repeating by a kind of involuntary sympathy the actual noises produced by such falls, were at last toned down, despecialised, or generalised in a sound like PAT. This PAT, reminding speakers and hearers of what they had felt in common, or of what they had done in common, would become radical quite as much

as the sounds accompanying the acts of our fellow-workmen. Having been divested of all that could remind the hearer of any special sound of rushing, smashing, or crashing objects, the root PAT might well become the sign of the general concept of quick or violent movement, and lend itself in the different Aryan languages to the most varied idiomatic applications.

And thus we find indeed that in Sanskrit pat-ati expresses the quick flight of birds, whether in the sense of soaring or falling. Pat-a-s means flight, pat-agas and pat-aṅgas bird, but also a grasshopper. Pat-atram means a wing and likewise pat-tram, which comes to be used afterwards in the sense of leaf of a flower, leaf of paper, letter. Pat-âka is a flag. Pât-as, meaning originally falling, is used in the sense of accident or what befalls, but also in the sense of fall, i. e. sin. Pât-akam means sin, and possibly one of the Indian names of hell, Pât-âla, may come from the same source. In Greek, too, the sense of flying prevails, as we see in πέτ-ομαι, I fly, in πετηνός, winged, ὠκυπέτης, quickly flying or running, ποτή, flight, πτερόν and πτέρυξ, feather, wing, and also in ποταμός, river. The sense of falling has attached itself more firmly to the reduplicated form πίπτω (for πιπετω), I fall. What befalls, an accident, also fate, is called πότμος, while πτῶσις, fall, came to be applied, first in a philosophical, afterwards in a grammatical sense, and was rendered in Latin by casus, case.

In Latin the meaning of flying is preserved in penna, feather, perhaps in praepes, quickly flying. Otherwise peto has taken the sense of falling on, assailing, seeking, demanding, with many derivative

applications, such as impetus, onslaught, appetitus, etc.

A number of English words, such as petition, petulance, competition, repetition, pen, pinnacle, feather, and many more, can all be traced back, step by step, and letter by letter, to this one root PAT, which is supposed by a kind of natural selection to have survived out of a large number of sympathic sounds, and to have become in the end a phonetic type expressive of the general concept of rapid motion.

All this is no doubt again hypothetical, and how could it be otherwise? But I do not see that we can entirely reject a theory which derives certain roots, expressive of the movements of objects, in just the same manner which we have followed ourselves in explaining the formation of roots, expressive of our own subjective movements. In one of my lectures on the Science of Language I examined in great detail the immense progeny of the root MAR, to grind, to crush. This root has been traced back to the sound which men utter while engaged together in the act of grinding or crushing. Now even in this case it is an open question whether these sounds are not to a certain extent imitations of the noises produced by our own acts, rather than of the sounds which we utter while occupied in grinding. At all events it would be difficult to say what exact share should be assigned to one or the other source. These imitations or sympathic sounds must at first have been very numerous, expressing such various shades of meaning as crashing, crunching, crushing, thrashing, smashing, cracking, creaking, rattling, clattering, mawling, marring, etc., till at last, after dropping all

that seemed too special, there remained the smooth and manageable Aryan root MÆR, with the general meaning of grinding or reducing to small particles.

The true nativity of Speech.

It should be clearly understood, however, that men who while grinding or platting utter the almost involuntary sounds of Mar-mar, or Ve-ve, are not yet speaking, as little as a child or an animal which screams on being pinched can be said to be conversing. All that I contend for is that our own acts are the first and the only direct objects of knowledge. They are what we will and what we know, and while of objects we can know one side only, we know all that there is to be known of our acts. It is when we remind ourselves or others of these acts by means of the sounds which used to accompany them, the clamor concomitans, that we make our first step towards real language. That first step manifested itself most naturally in the mood which we call the Imperative, i. e. the reminder, whether addressed to ourselves or to others. In all this we do not postulate anything which the most pedantic psychologist could wish to disallow. We do not suppose that the primitive speakers, on wishing to convey a command, looked about to find a sign, which sign they discovered in the sounds uttered involuntarily by themselves and their fellow-labourers in the performance of the commonest acts of their daily life. No, there was nothing premeditated in the process which changed those sounds into signs. When a man wished to grind, the sound Mar returned naturally to his lips, and when he wished that others should help him in grinding, the same sound was uttered, only in a voice so loud that it should

reach those for whom it was intended. It was the effect produced by these shouts which left on the mind of the man who shouted and of his clansmen who obeyed, the new impression that these shouts were useful signs, i. e. a means of making others think as we think, know as we know, will as we will, do as we do. This is the true nativity of language, a very humble manger, it may seem, and yet perhaps the most momentous event in the whole history of mankind.

The growth of Roots.

The difference between the theory which ascribes the origin of roots to sounds uttered by men while engaged in common acts, and the other which sees in some at least of these sounds more or less conscious imitations of noises produced by these acts themselves, is really not so great as the upholders of the one or the other opinion imagine. What is important in both is the parallelism between the process of generalisation of single sensations and the production of abstract concepts on one side, and the process of mutual friction and smoothing down of the sounds accompanying these sensations, on the other. This double process might either go on till the highest generalisations are reached, or it might be stopped at certain points, so that some roots retained something of their sharper outline and became popular on that very account, while others, more general in form and meaning, were used most frequently, till their real origin was completely forgotten.

In this struggle between generalisation and specialisation many roots must have crossed each other, and the summum genus of going, moving, doing, being, etc. must have been reached from many

different starting-points. This would explain how even during what may be called the Radical Period small communities, after a very short separation, became mutually unintelligible. We could thus perfectly understand the natural growth, not only, as in later times, of different dialects of languages sharing the same capital in common, but likewise of different families of languages, such as the Aryan and Semitic, possessing each its own peculiar roots, and yet, it may be, proceeding in the beginning from a common centre. I say we should be able to understand it, but I feel bound to add, if we clearly apprehend the process of the generalisation and specialisation of the radical elements of human speech, we should likewise understand that, from the nature of the case, it would be impossible ever to prove it.

Onomatopœic Roots.

Roots which occur in Pâṇini's Dhâtupâṭha, and which I should be quite willing to surrender as onomatopœic, are: KÂS, to cough, KÛ*G*, to hum, KU*Ñ*G, to rustle, KRAKSH, to crash, KHAR*G*, to creak, KSHU, to sneeze, KSHVI*D* and KSHVID, to hum, GU*Ñ*G, to hum, *K*UMB, to kiss, *K*ULUMP, to suck, PRUTH and PROTH, to snort, MÂ, to bleat, RA*T*, to howl, RÂ, to bark, SH*TH*ÎV, to spue, HIKK, to sob, HESH, to whinny, HRESH, to neigh, etc. Some of them might, no doubt, be disputed, but not one of them is of any importance as helping us to account for real words in Sanskrit. Most of them have had no offspring at all, others have had a few descendants, mostly sterile. Their history shows us clearly, how far the influence of onomatopœia may go, and if we once know its legitimate sphere, we

shall be less likely to wish to extend it beyond its proper limits.

Further Modification of Roots.

Having made these two admissions, not so much on account of their practical importance, for they concern the most insignificant portion of language only, as because it seems right, whenever there is an opportunity, to yield frankly and openly to arguments which have some reason on their side, we have now to consider whether, with Noiré's theory, we have really all we want for understanding the nature of roots and the growth of language. He has taught us to recognise in the conscious and creative social acts of men, as accompanied by various natural sounds, the true germs of concepts embodied in language. We have learnt how that consciousness of repeated self-willed acts becomes, to all intents and purposes, what we mean by an original concept, and how the phonetic sign inseparable from it is what we mean by a root-word. Even Hume could not maintain that the consciousness of the continuously repeated act of digging was but a singular impression, nor could Berkeley object that the mind had no idea of such continued acts. And as certain sounds naturally accompany every one of these acts and serve to recall it, we are not driven to the admission that, after the idea or the concept was formed, its phonetic body had to be fetched from elsewhere to give it security and shelter.

But though roots expressive of acts are no doubt the most primitive, the most numerous and important elements in the growth of human language and human thought, we must remember that in speaking we have to do more than to express our acts and what is connected with them. We

must try, therefore, to understand how roots, expressive originally of subjective acts, could be so modified as to convey both transitive and intransitive acts; how these intransitive acts might be conceived as mere states, and how these states, if represented as caused by something, might appear again either as active or passive, according to the peculiar view of each language.

Intransitive and Transitive Roots.

It has generally been supposed that originally all roots, expressive of acts, were what we call intransitive, and expressed merely the act, without any reference to the result produced by an act. Such suppositions are difficult to prove or to disprove. Each root, if it expresses an act, implies no doubt a subject and an object, whether they are expressed or not, and though it may be argued that nouns which express the object must be later than the verbs expressing the subject, every root, as root, would seem to contain potentially a transitive as well as an intransitive character. I use these technical terms, transitive and intransitive, on purpose, because transitive expresses exactly what we want to express, the going over of our own act to something else. Thus what we now call the accusative was in many cases an original locative, indicating the goal or object to which an action tended. Romam destruxit, 'he destroyed Rome,' was originally conceived exactly like Romam transivit, 'he went over to Rome,' the act of destroying being conceived as tending toward Rome, or, as we say, having Rome for its object. Cato[1] must have been perfectly aware of this when he enumerated the ques-

[1] See Noiré, Logos, p. 246.

tions to which the different cases answered, as Quis? Quoius? A quo? Quoi? and gave Quo as the question answered by the accusative. Speijer in his Sanskrit Syntax, § 39, begins his account of the accusative in Sanskrit quite rightly by saying 'the accusative expresses whither something is moving.' The first transitive employment of a root, expressive of digging, would probably have been no more than 'I dig a digging,' i. e. 'I dig a hole;' but at all events the root of digging being given, it would have become possible to apply it either intransitively or transitively. In English this power has been retained to the present day. We can say that the sky crimsons, i. e. becomes crimson, or that the dawn crimsons the sky.

Professor Noiré seems to think that the act became intelligible or realised in consciousness only through the result which it produced, the act of digging, for instance, through the hole dug, the act of platting through the mat platted. 'The fundamental meaning of roots,' he writes, 'was always the perceptible effect of social productive acts, and at the same time the act itself as characterised by its effects[1].' On such points positive assertion seems to me very hazardous. It may have been, as Noiré says, in certain cases, it does not follow that it was so in all. To my mind the consciousness of repeated acts seems the most important element in the character of roots, for it is by it and by it only that we can account for the conceptual nature of a root, the conceiving of many as one, while the effect of an act would always be single, and the single is never the object of conceptual knowledge. I do not deny the reaction of the

[1] Logos, p. 134.

objective concept on the subjective, but the first impulse, so far as I can see, must come from the subjective, it cannot come from the objective side. Noiré also seems to feel this, when he says (p. 242), 'In the signification of roots as the first elements of thought, there was the living sense of one's own activity, connected with the intuition of its effect as characteristic of that activity. Both were still undivided and undeveloped.' I should go a step further and ascribe the first concept to the will, conscious, first of all, of its willed acts, and then only of the result of these repeated willed acts. I can understand a concept of mere striking, rubbing, platting, etc. as soon as the accompanying sound has become the sign of these repeated acts, and only after such a conceptual sign has been formed and fixed, does it seem to me possible that the same sign should be applied to the effect produced by those acts, i. e. to a hole, to a flint, to a mat.

Subjective states.

It is more difficult to understand how roots, if originally expressive of acts only, could be made to express mere subjective states. It may be true that the necessity of expressing subjective states arose at a much later time, and was not called forth by any such pressing wants as, for instance, the necessity for ordering people to dig or to strike or to pull. Nor must we suppose that the growth of language was ever determined by the clear consciousness of a want, and by a deliberate consideration of the best means of meeting it. People did not ponder how to express their states of feeling, when they were either frightened or delighted. They had no concepts yet for fright or delight. But if they had a root to express shaking, the shaking of a

tree, for instance, and if they felt in themselves or saw in others the manifest effects of fear, namely a shaking of the limbs and a trembling of the breath, they would naturally apply a root expressive of the act, and more particularly of the intransitive act of skaking, either to themselves or to others, who appeared upset, or swayed, or shaken by fear.

Thus 'I shake' might mean I shake a tree, or I am in a state of shaking, i. e. I tremble, or I shake by him, i. e. I am shaken by him, as in vapulo ab eo fustibus.

From roots meaning to shake in these different senses various derivatives may be formed. Thus KAP, in Sanskrit kamp, means to shake. From it we have in Greek *καπ-νός*, smoke, not what shakes or is shaken, but what is in a shaking state, what moves, or winds and waves. KUP, which is probably a modification of KAMP, means to shake inwardly, to be angry. Connected with the Sk. root DHÛ, to shake, we have not only Sk. dhûti, dust, dhûma, smoke, but Gr. *θυμός*, not so much what is shaken, as what is itself in a constant state of commotion and activity. It is possible that the same root in its simple form of dhû, or in its derivative form dhav, may account for the Greek *θαῦμα*, originally the feeling of wonder and astonishment, then what causes that feeling, a wonder, a miracle. Now from this *θαῦμα* it is difficult to separate the Greek *θεάομαι*, which means originally to shake with wondering, and afterwards only to gaze or look simply. Thus we read Il. xxiii. 728, *λαοὶ δ' αὖ θηεῦντό τε θάμβησάν τε*. We frequently find *ἰδών* connected with it, as Od. viii. 17, *πολλαὶ δ' ἄρ' ἐθηήσαντο ἰδόντες*; v. 74; xxiv. 90.

Another common expression is θαῦμα ἰδέσθαι, a wonder to see, and then, a sight to see. Curtius, accepting Brugmann's opinion that the root is θjaf, would find it difficult to explain θαῦμα. It would certainly be interesting if not only the concept of hearing (SRU), but also that of seeing, could be traced back to a root originally meaning to shake, i. e. to vibrate.

'To heave' is used in the sense of going up and down, as a ship heaving in sight. Heaver may be one who heaves or lifts something, as a coal-heaver, or something that lifts, as a leaver; while heaven was probably intended for what is lifted on high, and heft is a common Shropshire word for weight, i. e. what heaves or is heaved.

Roots meaning originally to rub and to destroy, like the German aufreiben, come to mean I am rubbed out, I fall into decay, Ich reibe mich auf. In Sanskrit the root GAR means to decay, more particularly to grow old; hence garas, old age, γῆρας and γέρων. But its original meaning, like that of MAR, must have been to rub, crush, pound, as we see in Lat. gra-num, Goth. kaúr-n, γῦρ-ις, fine flour.

The root GÎ seems to have expressed some special act of violence and destruction, leading to conquest and acquisition. Hence gi-nâ-mi, I overcome, part. gî-tá; Greek βῑ-νέω.

With the short i, and Guna, it is the common verb for conquering; gáyati, part. gi-tá.

With additional â we have gyâ, violence, βία, gyâna, tyranny, gyeshtha, the strongest.

The same root, however, is also used to express the state of being overcome, collapsing, failing, growing old, as in gyâni, decay, gî-na, old, á-gîta, not

decayed, fresh, etc. Hübschmann[1] compares the Latin viêtus, and possibly *gyeshtha*, the oldest, might thus receive a better explanation.

The root KHÂD means to crush, to chew, to eat; the root KHID comes to mean to press down, to oppress, to aggrieve. But in the Âtmanepada khinte means to feel oppressed, weary, sad; khid-ra, oppressed. In Greek κήδω is to oppress, κήδεται and κέκηδα he grieves, κήδος sadness.

We must not attempt to define these crude processes in the earliest growth of reason by logical distinctions belonging to a much later phase. All we can do is to try to follow the first tentative steps of reason, or what we now call grammar, taking care only not to forget that our thoughts must be very different from the thoughts of those who first framed what we call a neuter verb.

Neuter verbs used as active.

Several verbs which to us are active and transitive seem to have passed through a phase in which they were neuter, and expressive of a state only. Thus 'to hear' seems to us an active and transitive verb, but 'to hear' may also have been expressed by 'to be struck, or to be set in motion by something,' and in that case the ablative, or in Greek the genitive, would have been most appropriate for what to us seems to be the object of hearing. A hunter, for instance, laying his ear to the ground in order to discover the approach of enemies or wild beasts, might well say 'I shake,' or, as we should now express it, 'I vibrate,' adding 'from a troop of horsemen' or 'from a lion,' and thus expressing what we express by saying, 'I hear a

[1] See Hübschmann, Indo-germanischer Vocalismus, p. 36.

troop of horsemen' or 'I hear a lion.' And it is certainly curious, as I have pointed out before, that the Sanskrit root SRU, to hear, the Latin cluo, does actually occur in the Rig-veda in the sense of shaking[1]: Rv. i, 127, 3, vîḷú kit yásya sámṛitau sṛúvat vánâ iva yát sthirám, 'at whose approach even what is strong and what is firm would shake like the forests.' See Muir, Sanskrit Texts, iv. 494; Boehtlingk-Roth, s. v.

Again, a root expressive of an act might be used to express the state produced by that act. Thus 'to dig,' 'to labour' might come to mean to work, to weary, to fail, ideas in which we see united in such words as samî, work, sâmyati, to tire, Gr. κάμνειν.

Passive verbs.

From such roots employed to express a state there is an easy transition to roots employed for what we call passive purposes. It has been argued that in the Aryan languages, and particularly in Sanskrit, what is called the Âtmanepada or middle voice, often expressive of states, is more primitive than the Parasmaipada or active and transitive voice, and that it lent itself more easily to the expression of passive states, and became in fact what we call the passive voice. Thus 'I shake,' might mean 'I tremble, I fear;' 'I shake through some one' would mean 'I am frightened by him.' The introduction of passives with ya for the special tenses belongs, of course, to a much later phase.

[1] It will be seen that I differ somewhat from the view which Noiré takes of this passage (Logos, p. 263). He thinks that sru, as applied to forests, means here to sound, but this is not the case. It means, as the metaphor shows, to shake visibly, not audibly, and when verbs of hearing were first construed with an ablative, this recollection of shaking must still have been alive.

We should thus be able to understand the natural evolution of four verbal phases, though their full elaboration belongs of course to a much later time:—

1. Active: I shake, i.e. something undefined;

2. Neutral: I shake, i. e. I am in a state of shaking;

3. Passive: I shake, or I am in a state of being shaken, by some one;

4. Active transitive: I shake a tree.

Objective acts.

All this, however, would only suffice to express what we know as our own deliberate acts or our own conscious states, and, supposing that our explanation of the origin of roots be right, namely that they are evolved from sounds accompanying what may be called social acts, performed by many people with a common purpose, or social states, such as fear or joy, we could easily understand how the early framers of language succeeded in expressing, not only their own acts, but the acts and states of their fellow-workers also. They would have found it easy to say 'We dig' as well as 'I dig,' 'Thou diggest,' and 'You dig,' and after a time also 'He digs' and 'They dig.' 'We' is really an earlier concept than 'I,' and 'we dig' would come more natural than 'I dig,' while the mere necessities of an active life would soon introduce expressions for Dig! i. e. you or thou!

Nor is it a great step from this more or less dramatic language in the first and second persons to the more historical statements conveyed in the third persons, 'He digs' and 'They dig.' Such utterances also could hardly fail to have been called forth by the simple intercourse of hunters, warriors, or diggers of the soil, and would involve no further effort than the transference of our own acts or states to persons in every other respect like ourselves.

But it is totally different when we come to consider the next stage, the transference of our acts and states to the objects of nature. Fundamental metaphor. Small as this step now appears to us, it is really enormous. Nothing to us seems more simple than after saying 'He digs,' to say also 'It digs,' and yet this small step amounts to a complete re-translation of the text of our experience into a new language. I do not speak here of the so-called category of causality which first raises all sensations into percepts and makes us speak of objects without as the cause of our experience within. That lies behind us. I speak of that fundamental metaphor which makes us conceive and speak of these objects as if they were subjects like ourselves. But, strange as this interpretation of the objective world may seem, and marvellous as is the universal mythology to which it has led, it was nevertheless inevitable. As we know one kind of being only, namely our own, and as we possess one language only, namely that which expresses our own acts and our own states, and by implication those of our fellow-workers, what can we predicate of outward objects except some kind of being like our own, and what language can we apply to them except that which we have framed to express our own acts and our own states? When I see the lightning digging a hole in my field, what can I say but that a digger has dug a hole? When I see the wind grinding branches together till they catch fire, what can I say but that a grinder has ground out fire, just as I say of myself that I have ground out sparks by rubbing two fire-sticks till they spurt out flames? What we now call lightning was originally 'Digging, tearing, bursting, sparkling there and

then.' What we now call wind may have been 'Smashing, grinding, hurling, blowing, there and then.'

As soon as this mental act was performed, mythology, in the widest sense of the word, was born. A new world was created, a world which could be nothing but a reflex of ourselves, for the only light we could throw on it was the light from within, the only concepts by which we could conceive it were the concepts of our own acts and states, the only language we could apply to it was the language which was true of ourselves and of our fellow-workers. Here is the true key to the riddle of mythology, and, in one sense, of theology also, namely, the inevitable metaphor or transference of the subjective to the objective, while what we commonly call mythology is but a small remnant of that universal phase of human thought, a faint survival of what constituted once a complete realm of thought and speech. The same people who had learnt to speak of themselves as runners now spoke of rivers as runners. The sun darting with his rays was to them a warrior piercing with his spears. The cloud carried along by the wind was as a sailor or a ship blown across the sea with flying sails. If men could roar, so could the storm; hence he was called the roarer. If man could smash, so could the thunderbolt; hence he was called the smasher. If man could smile, so could the sun; hence he was called the bright. If man could measure, so could the moon; hence he was called the measurer of the sky, the maker or ruler of nights and fortnights and months. It has always been supposed that all this was the result of poetical

fancy, that it was a voluntary, if not a capricious act. But it is time that people should understand that it was not so, for they will never understand mythology till they have learnt that what has been called anthropomorphism, or personification, or animism was really a dire necessity in the growth of our language and our reason. It was absolutely impossible to grasp and hold, to know and understand, to conceive and name the world without us, except through this Fundamental Metaphor, this universal mythology, this blowing of our own spirit into the objective chaos, and re-creating it in our own image. The beginning of this second intellectual creation was the word, and we may add with perfect truth that all things were made, that is, were named and known by this Logos, and without him was not anything made that was made.

By means of this fundamental metaphor then the roots which originally had all a subjective character assumed the power of expressing the acts and states of our objective world also. Man conceived of the river as a tearer or runner, of the tree as a protector, of the stars as sowers of light, of the moon as a measurer, of the sun as an enlivener, and they were thus enabled to speak of the river as digging his furrow through the rocks, of the tree as protecting their huts, of the stars as showering down light out of darkness, of the moon as measuring their nights and days, and of the sun as the giver of light and life, as the cherisher, the nourisher, the father of mankind, though sometimes also as a friend who departed every night and left us in darkness, who died in winter and left us to starve or to die; nay, even as an enemy who

destroyed our harvests and whose scorching rays killed our cattle and our children. We shall have to consider all this more fully when we come to examine the growth of mythology in the narrower sense of the word, and we shall then see how all that has been called either animism, or anthropomorphism, or personification has its common root in a much deeper stratum of thought, namely in the psychological necessity of our conceiving all objects as subjects like ourselves. If we want a name for this psychological necessity, it ought to be called Subjectivism, before it assumes the various characters of animism (conceiving objects as animated), anthropomorphism (conceiving objects as men), or personification (conceiving objects as persons). By means of this intellectual process which enabled the earliest speakers to use the sounds expressive of subjective acts and states with reference to all that had become objective to them in outward nature[1], we are enabled to understand the gradual formation of four classes of objective roots :—

1. Active : the wind shakes (it blows) ;
2. Neutral : the tree shakes ;
3. Passive : the tree shakes (is shaken) by the wind ;
4. Active transitive : the wind shakes the tree.

[1] See Beneke, Neue Grundlegung zur Metaphysik, viii. Lehrs. ; Gerber, Die Sprache und das Erkennen, p. 92.

CHAPTER VII.

THE ROOTS OF SANSKRIT.

Roots of Aryan languages.

It may be objected, no doubt, that all that has hitherto been suggested on the origin of roots and concepts is theory only, or a mere outline of the general purposes which the roots of any language might be made to serve, provided always that such roots exist, and that they possess the peculiar character which has been ascribed to them. It is easy to say that all roots must express acts, and more particularly such simple acts as constitute the daily occupations of a primitive society. The question is, Is it so, and can we by historical evidence prove that it was so in any of the languages best known to ourselves?

In order to answer this question perfectly, we ought, if possible, to analyse the dictionary of a whole family of languages, the Semitic or Aryan, and show that the original meanings of their roots are really such as we have postulated. Hebrew has been reduced to about 500 roots[1], but it would be desirable that some professed Semitic scholar should undertake to collect the roots for the whole Semitic family in its widest sense.

An attempt has indeed been made to collect the roots of the whole Aryan family, but the results are as yet so uncertain that it would be unsafe to base

[1] Renan, Histoire des Langues Sémitiques, p. 138.

any arguments on so changeable a foundation. Benfey counted 1706 roots in Sanskrit, 226 of classes ii, iii, v, vii, viii, ix; 1480 of classes i, iv, vi, x, the last comprising 143 roots. For Gothic, Benloew admitted 600 radicals, for modern German only 250, while Grimm has collected of strong verbs alone 462 in the Teutonic family. For Slavic, Dobrowsky gave 1605 radicals. Pott thinks that a language has on an average about 1000 roots, but Fick has reduced the number of roots necessary to account for the whole wealth of Aryan words to a much smaller number. He admits as primitive roots those only which consist

1. of one vowel;

2. of the vowel a and consonant (ad, ap, ar);

3. of a consonant or double-consonant and the vowel a (da, pa, sa, sta, spa, sna)[1].

It stands to reason that when there is so much doubt as to what is the exact number of roots in any single language, and what is to be considered as a typical root or as a mere variety, there must naturally be much greater doubt when we have to determine what are the primitive phonetic elements out of which, according to general phonetic laws, a whole family of languages could have fashioned its dictionary. Fick's attempt to do this for the Aryan family is very creditable, but it goes too far.

This being the case, it is best, I think, to begin with an examination of the roots of one of the Ayran languages only, with a view of ascertaining their original form and meaning. The objection that we cannot properly speak of roots except during a period

[1] Fick, Wörterbuch der Indo-germanischen Sprachen (1870), p. 939.

when the Aryan languages were not yet separated is not tenable. The radical period of Aryan speech must no doubt be placed before the agglutinative and inflectional (I still hold to these three stages of evolution), and in that sense all roots may be said to be Aryan, and not either Sanskrit, Greek, or Latin. But we have only to suppose that all Aryan languages, except Sanskrit, had become extinct, and nothing would prevent us in that case from drawing up a list of Sanskrit roots.

The chief reason, however, why I prefer to try the experiment which we have to try, on the roots of Sanskrit, is that we possess for Sanskrit a very complete, perhaps more than complete list of roots (dhâtupâ*th*a) which is ascribed to a very ancient grammarian, Pâ*n*ini, whom I place between the time of Buddha and Alexander the Great, though I have little doubt that much of the work ascribed to him must have been prepared for him by earlier grammarians. To Hindu grammarians at all events belongs the credit of having for the first time conceived the idea of a root, and of having made as complete a collection of the constituent elements of their language as it was possible to make in their time. If therefore we can prove our point, viz. that all the important roots of Sanskrit are expressive of simple primitive acts, we have at least a strong presumption in favour of our theory that the roots of all Aryan languages, possibly of the Semitic and Turanian languages also, will show the same character. We must be satisfied with small and imperfect beginnings, and though those who lead the way into a new field of research are sure to be left behind by those who follow in their track and cannot escape

the blame of having done the work that has to be done very imperfectly, all pioneers must take their chance, and if they are knocked down must take comfort in the thought that without them probably no advance whatever would have been made.

Pânini's Dhâtupâtha.

Before we begin to examine Pâṇini's list of roots, we must first consider his position in the history of the language and literature of India. Like his grammar, his collection of roots stands on the very threshold of what is commonly called Sanskrit literature. If we except the Vedic literature, there is nothing more ancient in India than Pâṇini, and his authority has never been questioned for the last two thousand years. During the Vedic period Pâṇini had precursors in his own line, namely the authors of the Nirukta and of the Prâtisâkhyas, but from the close of the Vedic period the position of that grammarian has been quite unique. No Academy ever claimed such absolute authority as he possessed. Whatever in the later so-called classical literature contravenes a rule of Pâṇini is ipso facto wrong, and not even the greatest poets, such as Kâlidâsa, would venture to put their judgment against the ipse dixit of their inspired grammarian. Therefore, even if we, from our point of view, should be able to show that many of Pâṇini's rules and roots are fanciful and more than fanciful, the fact remains that these rules determined the whole of what is called Sanskrit literature, with the sole exception of certain portions of the Mahâbhârata and Râmâyaṇa, while there is not a root in his Dhâtupâṭha which a Sanskrit author, even at the present day, would not consider himself perfectly justified in employing.

A work, therefore, such as Pâṇini's collection of

roots is of the highest value to the student of the history of Sanskrit. It has stood alone, unquestioned and unrivalled for thousands of years, and it is in our days only that the students of other languages have been able to produce anything like it, perhaps, I ought to add, something better than it. We must bear in mind also that even what to us may appear purely theoretical and fanciful in Pâṇini's grammar is the theory and fancy of an age so remote that its very theories and fancies may become more important than the facts of later ages.

But however stupendous that monument of Indian ingenuity and industry appears, we must not be blind to its defects, though these defects may be inherent in the nature of the work. What it proposes to do is to give us, as the result of a careful grammatical analysis, those elements of language which cannot be further analysed, and which in Sanskrit are called dhâtu, a feeder or a root. But the discovery of these roots is beset with great difficulties. Roots are liable to phonetic changes, and in the process of composition and decomposition they are sometimes completely lost. It requires a perfect knowledge of the history and the phonetic laws of a language before we can, for instance, trace the Bohemian dci, daughter, to the root DUH, to milk, or aetas, age, to the root I, to go, or the French âge to the Latin aetaticum. It could hardly be expected therefore that Pâṇini and his predecessors should always have been successful in discovering the true roots of Sanskrit words, or that they should have resisted the temptation of admitting new and fanciful roots, whenever it seemed difficult to trace certain words back to the recognised feeders of the language.

Hence that large number of what we call unnecessary roots, that is to say roots imagined for the derivation of words which may be quite as well derived from other roots, or which admit of no satisfactory derivation whatever. For instance, a root NA*T*, to dance, is put down in the Dhâtupâ*th*a in order to account for na*t*ati, he dances, nâ*t*aka, a play, though this is but a regular Prâkritic modification of the older root NṚT[1], to dance. Again, to account for such a word as badarâ or badarî, the cotton tree, a root BAD is admitted in the sense of being strong. We must remember that Hindu grammarians were at perfect liberty to admit as many roots as they pleased, for to them these roots were not, what they are to us, historical facts, but simply the result of phonetic analysis, the remainder of a process of subtraction which removes from words all that can be accounted for as formal, whether as suffix, prefix, or infix, or as the result of the phonetic strengthening and weakening to which the material elements of a language are liable, when passing through the stages of growth and decay.

An insufficient knowledge, however, of the phonetic laws of Sanskrit, though it may account for some of the unnecessary roots in Pâ*n*ini's Dhâtupâ*th*a, cannot account for all. Westergaard, to whom we owe the first critical edition of the Dhâtupâ*th*a in his Radices Linguae Sanscritae, published in 1842, a work that will always rank among the masterworks of Sanskrit scholarship, hesitated before ex-

[1] In transliterating roots I use Ṛ (for *ri*) when ar may be shortened to *ri*; but I use Ṛ, where Sanskrit grammarians write *rî*, namely when ar varies with ir, and sometimes also with ur. Hence HṚ, to take, but GṚ, to swallow, and PṚ, to fill.

pressing a decided opinion on the character of what I call unnecessary roots. With the caution and modesty characteristic of the true scholar he advised his fellow-labourers to continue their researches, and to wait for new discoveries in Sanskrit literature before asserting the purely fanciful character of these unnecessary roots. Mira assertio, he says, quum tam paulului literae Indicae notae sint. Puto contra quemque sibi persuasum habere posse eas radices, de quibus omnes grammatici consentiant, quum literae Indicae melius cognitae fuerint, omnes exemplis inde sumptis probatas repertum iri!

Circumstances, however, have changed, and our knowledge of the ancient literature of India, particularly the Vedic, has grown so much that we can hardly continue to hope for any considerable additions. We must therefore try to account for Pâṇini's unnecessary roots in a different way. Benfey suggested that they might have been taken from dialects spoken in India at the time when these roots were collected, or even from the languages of neighbouring tribes. This is certainly an ingenious conjecture, and I shall try to show that it can be supported by the opinions of native scholars.

The spoken language, Bhâshâ, at the time of Pâṇini.

What we know of literary Sanskrit can never be supposed to have represented the living speech of the whole of India. On the contrary, it seems to represent a very small segment only, the language of the Brâhmans, the language of religion, law, and literature, and no more. This is admitted by Patañgali, the author of the great commentary on Pâṇini's grammar, who when the question is asked who are the

authorities to settle what is right and what is wrong in Sanskrit grammar, replied: the 'Sishṭas,' i. e. the educated people, but not the Sishṭas of the whole of India, but those of Âryâvarta only, that is the country east of Âdarsa, west of Kâlakavana, south of Himavat, and north of Pâriyâtra [1].

This shows that Patañgali, and, as we shall see, Kâtyâyana also, were fully aware of the fact that many local varieties of Sanskrit were spoken over the vast extent of India.

The question is, what was the classical Sanskrit on which Pâṇini founded his grammar? It was not the Veda, for he has to give special rules for that. Nor was it the language which we find in any of the literary works accessible to us, for all of them, with the exception of mere metaphrases of Vedic texts and the two great epic poems, are founded on his grammar, not his grammar on them. Pâṇini constantly refers to the Bhâshâ, the spoken language. But that Bhâshâ from which he takes his rules and which he tries to bind down by his rules, had changed so much, even at the time when his earliest commentator, Kâtyâyana, wrote, that not only words [2] but even grammatical forms had gone out of fashion in the meantime. Kâtyâyana [3], it is true, speaks in general terms only of the fact that some words enjoined by Pâṇini are no longer usual, and that they may belong to a different country. But Patañgali enters into details. He points out that forms like the 2 p. pl. of the reduplicated perfect, ûsha, you

[1] Pâṇini, ed. Kielhorn, vi, 3, 109; Vedic Hymns, vol. i. p. 59.
[2] See Bhandarkar, Wilson Lectures, p. 28.
[3] Pâṇini, ed. Kielhorn, vol. i. p. 9.

shone, tera, you crossed, *k*akra, you made, pe*k*a, you cooked, which were taught by Pâ*n*ini and occur in the Veda (such as ûshá in Rv. iv, 51, 4; *k*akra in Rv. iv, 36, 4) had become obsolete, and had been replaced by such expressions as yûyam ûshitavanta*h*, yûya*m* tîrnâ*h*, yûya*m* k*ri*tavanta*h*, yûyam pakvavanta*h*.

More important, however, and in some respects even more confirmatory of Benfey's opinion, are Pata*ñg*ali's remarks on Kâtyâyana's Vârttika, which states plainly that some of the roots and words, sanctioned by Pâ*n*ini, may have belonged to various localities in India. In this passage of the Mahâbhâshya, which I discussed many years ago (1852)[1], we read (Vârttika, 5), 'They were all used in another place.' Pata*ñg*ali adds: 'And if you say that they are not found, then let an effort be made to find them, for the sphere in which a word is used is wide. The earth has seven islands, there are three worlds, four Vedas with their supplements and Upanishads, divided into many texts. There are a hundred branches of the Adhvaryus, the Sâma-veda has one thousand modifications, the Bahv*ri*ya has twenty-one, the Âtharva*n*a-veda has nine divisions. There is, besides, the Vâkovâkya (dialogues), the Itihâsa (legends), the Pura*n*a (old traditions), and the Vaidyaka (medicine). So wide is the sphere in which a word may be used. Without having explored the whole sphere in which a word may be used, it would therefore be mere rashness to say that certain words are not used.'

After this follows another important passage,

[1] Zeitschrift der D. M. G. vii. 373.

important because it treats of a subject which is treated in a similar manner in the Nirukta also, a work supposed to be anterior to Pâṇini. There, in the Nirukta, ii, 2, we read: 'Vedic nouns (*krit*) are employed which are derived from ordinary roots, such as damûnâḥ and kshetrasâdhâḥ, and likewise ordinary nouns are employed which are derived from Vedic roots, such as ushṇa and ghṛita.' This means that dâmyati, from which damûnâḥ is formed, is not found in the Veda[1], though it is common in ordinary Sanskrit. The same applies to sâdhyati, from which kshetrasâdhâḥ is formed. On the other hand, the root of ushṇa, hot, exists in the Vedic language only, viz. USH (first conj.), to burn; likewise that of ghṛita also, which is GHṚ (third conj.).

This shows that the author of the Nirukta was aware that certain verbal roots were used in the Veda which were not used in post-Vedic Sanskrit, and that other verbal roots were used in post-Vedic Sanskrit which were not used in the Veda. It shows, in fact, that already at the time of Yâska Vedic Sanskrit had been replaced by another kind of Sanskrit.

We now come to another remark of the same author which proves that he knew not only of these chronological, but likewise of certain local or dialectic differences in the language as spoken at his time. For he goes on to say:

'Among some people the verbal roots only are used, among others their derivatives only. For instance, the verbal root *sa*vati, meaning to go,

[1] It occurs once in a very artificial passage of the Bṛihad-âr. Up. v, 2, 1; S. B. E., vol. xv. p. 189.

occurs among the Kambo*g*as only, while they use its derivative savas (corpse) among the Âryas. The verbal root dâti (to cut) occurs among the Prâ*k*yas (Eastern people), its derivative dâtra (sickle) among the Udî*k*yas (Northern people).'

Yâska, therefore, who is anterior to Pâ*n*ini, was aware of the existence of provincial words, and at a later time Pata*ñg*ali fully endorsed his remarks. After the passage translated above, Pata*ñg*ali, continuing almost in the very words of Yâska, says: 'The verbal root savati, to go, is employed among the Kambo*g*as only, the Âryas employ it in the derivative form savas (corpse). The verbal root hammati is employed among the Surâsh*t*ras, ra*m*hati among the Prâ*k*ya-madhyamas, while the Âryas use only gami, in the sense of to go. Dâti, to cut, occurs among the Prâ*k*yas, dâtra, the sickle, among the Udî*k*yas.'

I have quoted these remarks of Yâska, Kâtyâyana, and Pata*ñg*ali because they seem to me to confirm, what would otherwise be a mere conjecture, namely Benfey's view that the language spoken at the time when Pâ*n*ini composed his grammar was much richer, much more diversified in different parts of India than we imagine. Pâ*n*ini himself calls that language Bhâshâ, and it is difficult to understand how some scholars can deny the historical character of that language, when we see how Pâ*n*ini throughout his grammar takes its existence for granted, and carefully distinguishes it from the *Kh*andas, Nigama, Mantra, and Brâhma*n*a, that is the Vedic literature.

If therefore there are roots in Pâ*n*ini's Dhâtupâ*th*a, which cannot be authenticated in the Sanskrit literature known to us, Benfey's opinion that they may

have been taken from the language, as spoken in Pâ*n*ini's time in different parts of India, seems perfectly legitimate, and ought not to be summarily rejected, although it is right to look for other explanations also.

Vulgar dialects at the time of Kâtyâyana.

We must take care not to transfer what Kâtyâyana, still less what Pata*ñg*ali tells us, to the time of Pâ*n*ini; but, after making that reservation, we may add that in Kâtyâyana's time vulgar dialects must have existed, which, though they had not yet suffered the phonetic havoc which characterises Prâkrit[1], had, according to Pata*ñg*ali's quotations, come very near to the standard of Pâli.

Pata*ñg*ali, in discussing the merits and demerits of the study of grammar, has to meet an objection that, in learning the right word, we cannot help learning at the same time a number of vulgar words (apabhra*m*sas), such as gâvî, go*n*î, gotâ, gopotalikâ, which are all dialectic varieties of the classical word gau*h*, cow.

In another Vârttika (i, 3, 1, 12) Kâtyâyana adds that it was necessary to give a complete list of all Sanskrit roots in order thereby to exclude such verbs as â*n*apayati, etc. Pata*ñg*ali adds va*tt*ati and va*ddh*ati. These three words, like gâvî and

[1] Kielhorn in the Z. D. M. G. xxxix. p. 327 calls these words Prâkrit, but to avoid misunderstanding, it will be well to distinguish between Pâli and the other Prâkrit dialects, properly so called, though, no doubt, the name prâkr*i*ta may be applied to both. Supati, too, which he quotes from Pâ*n*. iii, 1, 91, 4, is Pâli rather than Prâkrit, where svapna has dwindled down to sivi*n*o (Var. 13, 63). See Jacobi in K. Z. xxv. 292, 603; Bhandarkar, Wilson Lectures, p. 89.

gonî, are not so much Prâkrit as Pâli, viz. ânâpeti, to command, vattati, to be, vaddhati, to grow. And when he adds that in ordinary parlance kasi is used for krishi, disi for drisi, these are again Pâli words, rather than Prâkrit, for in Prâkrit krishi would be kisi[1], and drisi, disi.

I have referred to these passages in order to claim an unprejudiced consideration for Pânini's list of roots. I do in no wise commit myself to a recognition of every root which Pânini has admitted, but I do not think we have any right to exclude as purely fictitious every root of which as yet we cannot prove from literary documents that it was used either in nominal or verbal derivatives. The chief literary documents which we can consult, excluding those which are completely under the sway of Pânini, are the Brâhmanas, Âranyakas, Upanishads, Sûtras, possibly the Epic Poems, and these require a much more careful examination than they have hitherto received. I go even further, and, considering the age of Pâli and of the Buddhist Sanskrit, I should look in these two branches of Indian literature for traces of roots, collected by Pânini from the so-called bhâshâ, with which they were contemporaneous. That the language of the Buddhist Sanskrit Sûtras is in some cases not very far removed from that of the Brâhmanas has been pointed out by Professor Kern in his Introduction to the Saddharma-pundarîka (Sacred Books of the East, vol. xxi. p. xvii). He there mentions the Buddhist Sanskrit term sarvâvat (Pâli sabbâvâ), which in classical Sanskrit has hitherto been met with in the Satapatha-

[1] Vararuchi, ed. Cowell, i, 28.

brâhmana only. A second instance, viz. ekoti, which occurs once in the Satapatha-brâhmana (xii, 2, 2, 4) in the sense of 'having one and the same course' and which Kern supposes to be the original form of the Buddhist Sanskrit ekoti in ekoti-bhâva (Pâli ekodi-bhâva), seems to me more doubtful, particularly if the true reading in the Lalita-vistara is ekoṭi-bhâva. In this case it is not impossible that the author of the Satapatha-brâhmana has what is called sanskritised a popular word, ekoṭi, which meant the same as ekâgra, by explaining it through eka-ûti, while the Buddhist author preserved the word as it was used in the bhâshâ, and the Pâli writer took it in another dialectic form as ekodi[1].

Professor Kern, who considers the root IÑG as a prâkritism of IṄG, shows that it occurs both in the Buddhist literature (Sanskrit, Gâthâ, and Pâli) and in the Brihad-âranyaka, vi, 4, 23.

The same applies to the root MIÑG which was collected by Pânini in his Dhâtupâtha. It is easy to say that Pânini invented it. But why should he have done so? I am not aware of any word which he could have derived from it. As to its meaning, I doubt whether Pânini took it in the sense either of speaking (bhâshâyâm) or of shining (bhâsâyâm), which our dictionaries attribute to it. Pânini gives in his Dhâtupâtha, xxxiii, 79–109, a string of roots which he defines as bhâshârthâḥ. Now these roots cannot possibly have all the same meaning, that of

[1] See Academy, March 27, 1866, Dr. Morris on Ekodi-bhâva; and April 3. For similar mistakes in sanskritising vulgar, apabhramsa, and Paisâki words, see Sylvain Lévi, Journal Asiatique, 1885, p. 415.

speaking or shining, and, though the compound is unusual, Westergaard was right, I think, in supposing that bhâshârthâḥ was here intended for 'they have those various meanings which are known in the Bhâshâ.' And of that Bhâshâ we find traces both in Pâli and in the Buddhist Sanskrit. In Pâli sam-miñgeti means to bend back, and I do not see how we can identify this, even diffidently, with samriñg (Childers) or samvriñg (Kern[1]). In Buddhist Sanskrit we have un-miñg, to bend forward, unmiñgita, opened. Here, therefore, we have a root which Pânini ascribes to the Bhâshâ, which, as yet, has not been found in Sanskrit, but which exists both in Pâli and in Buddhist Sanskrit.

Another fact which ought to make us pause before rejecting every root that cannot be authenticated in literature, is that now and then we meet with a root in the Dhâtupâtha which has been postulated by comparative philologists on the strength of its derivatives in other Aryan languages, but of which no trace has ever been discovered in Sanskrit itself. Thus dry, drought in English, dryge in A. S., trocken in German, require the admission of a root which, according to Grassmann's rule[2], would be DRUKH or DRAKH. How shall we account for the presence of such a root, namely DRÂKH, soshane, to be dry, in the Dhâtupâtha, considering that it has never yet been traced anywhere in Sanskrit, either in verbal or nominal derivatives? A secondary form DHRÂKH, with initial and final aspirate, was naturally a great delight to Grass-

[1] Buddhismus, i. p. 145.

[2] See Kuhn's Zeitschrift, xii. p. 81.

mann, as confirming his theory of the former existence of roots with initial and final aspirates, as required by A. S. dryge; but here we can hardly follow him. The vowel and the final consonant of DHRÂKH leave some difficulty, still the coincidence is too great to be dismissed as purely accidental.

Examination of Pâṇini's Roots.

After these preliminary observations we now proceed to an examination of Pâṇini's collection of roots. And here it gives me much pleasure to acknowledge how much light has been thrown on the true nature of this difficult work by Professor Hjalmar Edgren in his excellent paper On the Verbal Roots of the Sanskrit Language, published in the Journal of the American Oriental Society in 1879. Though from what I have said before, it will appear that I cannot agree with all his conclusions, his essay will always mark a very important advance in the true appreciation of Pâṇini's great work. He distinguishes, first of all, between two classes of roots, the authenticated and the unauthenticated. In the first class he comprises all such roots as have actually been met with in personal or impersonal forms, and he brings their number to 992. That number will probably be increased by a few casual discoveries, but I doubt whether it will ever go much beyond 1000. These are the living germs of the Sanskrit language, such as we know it from its literary remains.

From that number, however, Mr. Edgren deducts first of all 112 duplicates, forms such as DAD (2, 16) and DÂY (14, 9)[1] by the side of DÂ; DADH (2, 7) by the side of DHÂ; DUDH by the side of

[1] Westergaard, p. 6, note.

DHÛ; Î (9, 34; 24, 40; 26, 34) and AY (14, 1) by the side of I; VEP by the side of VIP, etc. He also treats nasalised as mere varieties of unnasalised roots, counting BADH and BAnDH, *S*UBH and *S*UmBH, SA*S* and SA*mS* as identical roots. So far most scholars would probably agree with him. But when he proposes to treat SKÆ and KÆ, SKHID[1] and KHID, STAN and TAN, SPA*S* and PA*S* likewise as mere phonetic corruptions, he seems to me to go either too far or not far enough. These roots have no doubt a common origin, but it is by no means clear that the forms without initial S were derived from those with initial S, or vice versâ. They should be treated as parallel roots, particularly as in several instances their meanings also are kept distinct. Thus we find SMÆ and MÆ, SKÆ and KÆ, *SK*AND and *K*AND, *K*AM and *SK*AM[2], STḤM and TḤM, SPHAR (SPHUR) and PHAR, *SK*UT and *K*(Y)UT, STÂ and TÂ, in stâyú and tâyú, thief; STAN, to thunder, and TAN in Sk. tanyatus, thunder, tonare, Goth. thunjan; STÆRH, to crush, and TÆRH, to crush; STIP and TIP; SNU and NU[3], Greek νυ. All these roots seem to me to have quite as much right to be treated as parallel, though cognate roots, as GRABH, RABH, and LABH; NA*S* and A*S*[4]; NAH and A*m*H (in a*m*has), etc.

After having reduced the number of authenticated roots from 992 to 880, Mr. Edgren next takes away 48 denominative roots, such as A*m*S, AṄK, ARGH,

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[1] This is a mistake; see Atharva-veda, v, 18, 7.

[2] See Benfey, Kurze Sanskrit-Grammatik, § 62, note.

[3] See Vedic Hymns, i, 166, 10; Fick, Wörterbuch, p. 966.

[4] The parallel forms would be a*s*, a*ms*, ana*s*, na*s*.

ARTH, etc. This reduction is quite reasonable, provided always that the nouns from which these roots are formed can be traced back to some other authenticated root. Thus DHÛP, to fumigate, can be accounted for as a derivation of DHÛ, to shake, SÛTR, to tie or to declare in the form of a sûtra, of SIV, to sew; but ŚABD, to sound, and MÛL, with ud, to uproot, are in a different position. They cannot, or, at all events, they have not yet been traced back to any other roots, and have therefore a right to at least a provisional place in the Dhâtupâṭha.

Mr. Edgren, after deducting 48 denominatives, and 16 other roots, which can be accounted for as derived from others, such as kâṅksh (from KAM or KAN), gâgar (from GṚ), daridrâ (from DRÂ), etc., arrives at 880 − 64 = 816 as the actual number of authenticated roots which cannot be traced back to any simpler forms.

But even these remaining 816 roots can be still further reduced by showing that several of them are clearly parallel roots, and form what may be called clusters. Thus, as l in Sanskrit is a parallel form of r, in most cases a later modification of it, such roots as RAMB and LAMB both meaning to hang down, RAṁH, to hasten, and LAṄGH, to leap, may fairly be counted as one, though they vary considerably in their application to special meanings. The same remark applies to certain roots in which r is final, such as DṚ, to burst, DAL, to split; ḰAR, to go, and ḰAL, to move; GVAR, to be hot, and GVAL, to glow; or where it is medial as in PRU, to move on, and PLU, to float; PṚUSH, to sprinkle, and PLUSH, to burn; MṚKSH and

MLAKSH; MRE*T* and MLE*T*; MRE*D* and MLE*D*; KRAND and KLAND. But if Mr. Edgren goes a step further and treats, for instance, lingual *n* and dental n as interchangeable and therefore BHA*N* as a modification of BHAN, I cannot follow him. The lingual *n* has a character of its own in Sanskrit, and I doubt whether it ever takes the place of a dental n without a definite reason. That r and sh produce that change is well known, likewise that in many cases r and sh may disappear, and yet leave behind their effect in the change of dentals into linguals. This may possibly account for KU*T* and KÆnT, TRU*T* and TÆD, GHA*TT* and GHÆSH, KRÎ*D* and KURD, though not without leaving several anomalies unexplained. But without a cause a dental never becomes a lingual, and therefore BHA*N*, to speak, though it may be a dialectic variety, cannot possibly be treated as a development of BHAN, to sound. If it is to be connected with some other root, I should rather think of BHÂSH, to speak, though I admit that it is as difficult to account for the presence of a final lingual sh in BHÂSH as for that of the final lingual *n* in BHA*N*.

And what applies to BHAN and BHA*N* applies also to such roots as AT and A*T*, to *K*AL and *S*AL, which Mr. Edgren groups together. AT, to go, could not be changed into A*T*, to roam, without some reason, and that reason, namely the former presence of an r or sh, would at once separate the two roots. If A*T* must be accounted for, the sautra root ÆT, to follow, to pursue, would offer a far better explanation than AT. As to *k* and *s* being interchangeable at the beginning of a word, I know no certain evidence for it, and cannot therefore, for

the present at least, accept such a cluster as *K*AL, *K*AR, and *S*AL, to leap.

It might be possible to show that dentals have been corrupted by local pronunciation into linguals, and in that case BHA*N* and A*T* might find parallels in DÎ and *D*Î, KSHVID and KSHVI*D*; but this is a question which would require very careful examination, particularly as regards the age of various roots.

Accepting, however, the general principles followed by Mr. Edgren, we may, under protest, admit his further reduction of 816 to 789 authenticated roots. He is himself fully aware that there may be much difference of opinion on this subject and that we must leave a certain margin to individual opinion. There would then remain 789 authenticated roots, sufficient to explain the whole wealth of the Sanskrit dictionary.

But though every one of these roots can claim a kind of personal individuality, I pointed out many years ago (Lect. S. L., vol. ii. p. 329 seq.) that some of them can be arranged in families, though I did not commit myself exclusively to any theory in order to explain the exact degrees of relationship which hold the different members of such families of roots more or less closely together.

Variation of Roots.

After carefully weighing the various theories proposed by Pott, Curtius, Fick, and others, I still retain my conviction that none of them suffices by itself to account for all the facts which we have to explain in the roots of Sanskrit. I cannot resist Pott's arguments altogether, and I find that Mr. Edgren also is inclined to look upon such a root as U*GGH*,

to leave, to abandon, as a compound of HÂ, to leave, with the preposition ud. Benfey admits VYAY = VI + AY; VYAÑK = VI + AÑK; VIDH = VI + DHÂ; PYUSH = API + USH, and some more. I should like to add at least BHISHAG, to heal, which I derive from SAG, to stick on, and bhi for abhi, in the sense of putting something on a wound or on any aching part of the body; likewise TYAG, to leave, to give up, from ti for ati, and AG, to throw, and possibly VYAG, to fan, from vi and AG; though I should not venture to go so far as some native commentators have done, who derive YAG, to sacrifice, from TYAG, to give up, i.e. to offer.

I am ready likewise to admit the theory of Benfey, Curtius, and others who recognise in certain final consonants derivative elements, possibly remnants of roots attached to roots. If we know how often p is used in Sanskrit to form causatives and denominatives, we can hardly doubt that the same element exists in SÆRP, to creep, as compared with SÆR, to go; in KALP, to prepare, as compared with KÆR, to make; in KSHAP (caus.), to destroy, as compared with KSHI, to destroy. In DHÛP (dhûpâyati), to fumigate, the p may be called a nominal suffix, because we have dhûpa, smoke, but it must be an old suffix, for we find in Greek θυφ, changed to τυφ, as in τῦφος, smoke, τυφών, whirlwind, τυφλός, blind.

If one remembers how often the root DHÂ, to set, has been used in Greek for the further differentiation of roots, as in ἐσ-θί-ω, to eat, from AD, in ἀμυνάθω[1] from ἀμύνω, νεμέθω from νέμω, ἐργάθω from ἔργω, διωκάθω from διώκω, also ἠγερέθονται from ἀγείρομαι,

[1] See Curtius, Verbum, ii. 339.

ἐκίαθον for ἔκιον, etc.[1], and in the Teutonic languages for forming preterites, such as Goth. habaidedum, we did have, we can hardly wonder that the final dh of many a Sanskrit root should have been interpreted in the same way. Why should not YUDH, to fight, be connected with YU, to join; MÆRDH, to destroy[2], with MÆR, to crush; GÛRDH, to praise, with GUR, to approve; and even SPÆRDH, to struggle, SPÆRH, to strive, with SPÆR, to win? Nay, if there was a root KRU, expressive of the hardness and harshness of raw flesh or blood (in kravis, kravyá, κρέας, cruor), and if from it we have krûra, harsh, crudelis, why not KRUDH, to be harsh or angry?

The final *g* too may seem to be connected with the root *GA* or *GAN*, to produce, and thus YU*G*, to join, may come from YU, to join; GAR*G*, to roar, from GÆR, to call out; MÆR*G*, to rub, from MÆR, to grind; RU*G*, to break, from RU, to break; VÆR*G*, to turn away, from VÆR, to guard; SÆR*G*, to send forth, from SÆR, to move; SPHUR*G*, to rumble, from SPHUR, to quiver. When we meet thus with a number of roots, having the same or nearly the same meaning, and differing outwardly by one additional letter only, the conviction, no doubt, grows strong that this letter was really added in order to modify slightly the meaning of the simpler root. If this happened in one or two cases only, other cases would follow by the mere force of habit.

But I feel doubtful nevertheless whether this theory which treats differentiating consonants such

[1] Roederer, Griech. Grammatik, § 82.

[2] M. M., Lect. S. L., vol. ii. p. 360.

as p and *g* and dh in SÆRP, SÆRG, and YUDH as verbal suffixes, possibly as remnants of independent roots, is altogether satisfactory. If there were no other consonants but p, *g*, and dh, or if some other consonants occurred with greater frequency and always with the same modificatory power, I should feel inclined to see in Curtius' theory a solution of all difficulties. There are cases which require consideration. Thus we find a final t in *K*IT by the side of *K*I, in DYUT and DYU, in KÎRT and KÆR. We meet with an additional formative v in INV, *K*ARV, *G*INV, *G*ÛRV, DHANV, DHINV, PINV, which may be connected with the u of the Tan class. But, as the argument now stands, we must in most instances go further back and look for deeper causes to account for the facts which such Sanskrit roots present to us; we must distinguish in fact between successive phonetic change, and contemporary dialectic variety.

I. Successive Phonetic Change.

I reckon as successive phonetic changes those where the transition of one vowel or consonant into another can be justified according to the general rules which govern the changes of letters in the Aryan languages, while I class all other changes as dialectic, using dialectic in a more special sense, for in its usual sense dialectic would, of course, comprehend many of the successive phonetic changes also which I wish to treat separately. This whole chapter of radical pathology has been well treated by Benfey[1], and after him by Curtius and others.

[1] Grammatik der Sanskritsprache, 1852, p. 71; Kurze Sanskrit-Grammatik, 1855, p. 26.

Vowel Changes.

(a) A and Â: in DAS, to waste, and DÂS, to weary; BAnDH[1], to bind, and BÂDH, to oppress; RAñG, to be bright, and RÂG (dîptau), to shine; VAS, to be eager, VÂS, to bellow; SAmS, to praise, SÂS, to order; SAS and SÂS, to cut. See besides such stems as SAM, śâmyati, etc., Pân. vii, 3, 74; and KAM, âkâmati, etc., Pân. vii, 3, 75–76; KAM, kâmayate, Pân. iii, 1, 30.

Corresponding changes of î and i, û and u, *rî* and *rĭ* may be seen in any Sanskrit grammar. Thus the verbs beginning with PÛ, shorten their vowel in the special tenses (Pân. vii, 3, 80). GUH lengthens its vowel in the same tenses (Pân. vi, 4, 89). DĬV forms dîvyati, BHÎ varies with BHĬ (Pân. vi, 4, 115).

Changes peculiar to special tenses may, as we know, become general in Sanskrit as well as in Greek. In *τίνω*, *φθίνω*, *φθάνω*, *δύνω*, the n belongs to the special tenses; but in such forms as *ἔκλινα*, *ἔπεφνον*, *γέγονα*, *μέμονα*, the *ν* has gone beyond its original sphere.

(b) Ă and Î: in AṄG, to move, IṄG, to move; AG, to drive, and ÎG, to drive, also EG; Ær, to go, and ÎR, to stir; AmS, to share, and ÎS, to rule, to possess; AS, to throw, ISH, to shoot; possibly AmH, to choke, to gasp, and ÎH, to desire[2]; KHÂD,

[1] If the nasal of a root remains throughout, I write it as a capital letter; if it is liable to be dropped, with a small letter.

[2] The root AmH means to throttle, to compress, and intransitively to be compressed or oppressed, as in *ἄχος*, anxiety, *ἄχομαι*, *ἄχνυμαι*, to be anxious. Then to be anxious for a thing, or to be gasping for a thing, would express the idea of desiring, wanting, and lastly to be in need of, to be needy, to beg. Thus *ἀχήν*, needy, and *ἀχηνία*, need, want, would find their explanation at the same time as egere, egenus, indigere. And whether NAH, to bind together, be connected with AmH, or whether it be a

to press, chew, and KHID, to press[1]; TAM, to be weary, TÎM, to be quiet; *S*ÂS, to order, *S*ISH, to teach; SÂDH, SADH, to reach the goal, SIDH, to reach the goal; *S*AM, *S*IM, to labour. There is, besides, the well-known Ablaut of roots in â (*η*, *ā*, *ω*), giving us DHÎ, STHÎ, and DÎ by the side of DHÂ, STHÂ, DÂ. See also MÎ, MÎ, and DÎ, Pân. vi, 1, 50.

(c) Å and U: in KAMP, to tremble, KUP[2], to be angry; BHA*G*, to share, and BHU*G*, to eat and drink, to enjoy; MAD, to gush forth, to rejoice, and MUD, to be glad. This change is different from the very common transition of an initial va into u as in VAKSH, to grow, and UKSH, to grow; VABH, to weave, and UmBH, to bind; VAH, to carry, and ÛH, to move; VÆ, to cover, and ÛR-*n*u, to surround. A similar change is very common in roots in which ar changes with ir and ur, and which Sanskrit grammarians generally write with long *rî*, such as GAR, GIR, GUR; *G*AR, *G*UR; TAR, TIR, TUR; PAR, PUR. This phonetic process might also explain such varieties as *K*AR-V, to chew, and *K*ÛR-*N*, to pound; BHÆ, to carry, and BHUR, to flicker; also SPHAR and SPHUR, to burst.

(d) A peculiar change of A to E: A*G*, ÎG, and E*G*, to set in motion; ÆDH and EDH, to grow;

separate root, it would give a clue to the Sanskrit root NÂDH (and even NÂTH), meaning to beg, literally to be straitened, pinched, or needy.

[1] Pânini, vi, 1, 52, states that khid takes â in the Veda *k*ikhâda for *k*ikheda.

[2] The change of a into u may be due to a parasitical v after k, t, and p. Thus, besides kamp and kup there may have been kvap, as in kvath, to boil. Tur and tvar may go back to tar, as tvaksh goes back to taksh.

GAMH and *GEH*, to kick, to struggle, zappeln, probably Old German gangan, to go; BHRA*mS* and BHRESH, to shake[1]; MÆRD and MRE*D*, to gladden; YAS and YESH, to boil; VAN and VEN, to desire; BHRÂ*G* and BHRE*G*, to shine. The change of î to ê should also be included here, as in HÎ*D* and HEL, VISH*T* and VESH*T*, for they seem hardly to be attributable to the ordinary Guna.

(e) Nasalisation of radical vowels: in A*S* and A*mS*; AH and A*m*H; MAH and MA*m*H; IDH and InDH; Æ*G* and Æ*ñG*; BADH and BAnDH; *S*UBH and *S*UmBH; SA*G* and SA*ñG*, and many more. All verbs such as MAnTH, Pân. vi, 4, 24; see also Pân. vi, 4, 25–26; vii, 1, 59–60.

Consonantal and other Changes.

(a) Reduplication with loss of final vowel: DHÂ and DADH; DÂ and DAD; DHÛ and DUDH; HÂ, to leave, and *G*AH.

(b) Final s added (desiderative): A*S* and AKSH; NA*S* and NAKSH; Î*S*, to reach, and ÎKSH, to perceive; KÅM and KÂṄKSH; YA*G* and YAKSH; BHÎ and BHÍSH; *S*RU and *S*RUSH; ÎR and ÎRSH; I and ISH and ÎSH; RAH, to free, to keep off, and RAKSH, to strive to keep off, i. e. to save[2]. With change of vowel, BHIKSH, to beg, from BHA*G*, to share, and BHAKSH, to eat; DHIKSH, to light, from DAH, to burn; MOKSH from MU*K*. I doubt, however, whether BHÂ and BHÂS, BHÎ and BHYAS, RÅ and RÂS, GÆ and GRAS, belong to the same category.

(c) Reduplication with contraction: GHAS, to

[1] See Joh. Schmidt, Zwei Arische A-Laute, in K. Z. xxv. p. 62; but the change of palatal *s* into sh remains unexplained.

[2] See Curtius, Grundzüge, 28; 64.

devour, and *G*AKSH, to devour; HAS, to laugh, and *G*AKSH, to laugh; KAS in *K*AKÂS, to shine, and *K*AKSH, to shine, to see; SA*K* and SA*SK*.

(d) Prosthetic i as in IYAKSH, IRA*G*, IRADH, and even INAKSH, by the side of YA*G*, *ÆñG*, RÂDH, and NA*S*; probably due to imperfect reduplication.

(e) Final Â (and î) with shortening of base: Î and YÂ, to go; U and VÂ, to weave; KÂ*S*, to shine, and K*S*Â, i. e. KHYÂ, to tell[1]; GAL, to drop, and GLÂ, to droop, unless connected with *GÆ*, to decay; GH*Æ*, to drip, GHRÂ, to sniff; *G*AN, can, and *GÑ*Â, to know; *G*AS (upakshaye) and KSHÂ, to fail (kshaye)?; *G*Î and *G*YÂ; T*Æ* and TRÂ; D*Æ*, to tear, and DRÂ, to run; DHAM and DHMÂ; DHÎ and DHYÂ; P*Æ* and PRÂ; PÎ and PYÂ; BHAS and PSÂ, to devour; MAN and MNÂ; MAL and MLÂ; VÎ and VYÂ, to cover; *S*Î, to sink, and *S*YÂ, to settle, to curdle; *S*Ŭ and *S*VÂ, also *S*VI; *SÆ* and *S*RÂ, to boil; SAN (?) and SNÂ (also SNU, to drop); STÎ and STYÂ, to stiffen; HŬ and HVÂ, to call. The Sanskrit root *KH*Â, to cut, from which *kh*âta, *kh*ita, and *kh*yati, presupposes a root SKÂ, which appears in Lat. de-sci-sco, etc. (Curtius, p. 145). SKÂ, however, points to SAK, and this appears in Lat. sec-are (Ascoli, K. Z. xvi. p. 207).

The same phonetic process is well known in Greek grammar, though restricted to a more definite sphere: e. g. καλ and κλη in κέκλη-κα; βαλ and βλη in βέβλη-κα; δαμ and δμη in δέδμημαι; μεν and μνη in μέμνημαι; στορ and στρω in ἔστρωμαι. From θαν

[1] Rig-veda, Prâtisâkhya, p. 13, note; cf. Zend khçâ.

in θανεῖν and θάνατος we have θνητός; from καμ in κάματος, κμητός; from τερ in τέρετρον, τρητός, τιτράω, etc.[1]

Possibly the roots DÂ, SÂ, and *S*Â belong to the same class. If, as has been supposed, DÂ, to divide, is connected with AD, then

AD: DÂ, to divide, dâti, dyati, dayate;

AS: SÂ, to throw, sâti, syati, (saya);

A*S*: *S*Â, to sharpen, *si*-sâti, *s*yati, (*si*-saya).

(f) In many cases roots with final Â have secondary forms in Î and Ĭ, becoming ay and ây by Guṇa and Vṛiddhi. It is usual to represent the roots which change î to ây, as ending in âi or ây, and they are often treated as separate roots by native grammarians. But if we refer, for instance, DHÂ, to suck, as in adhât, dhâsyati, etc., and DHĬ, as in dhâya, dhayati, dhinoti, and dhinvate, to one and the same source, why not PÂ, to drink, as in apât, pâsyati, etc., and PĬ as in pipâya, payate, and pinvati? Only while some of these roots have developed every one of these varieties, like DHÂ, DHĬ (dhăy), and beside, DHI-nu, DHI-nva, others are not so complete. GÂ, for instance, exists as GÎ, but not as GĬ; *K*Ĭ (*k*ây) exists as *K*Ĭ, but not as *K*Â. I have no doubt, however, that *K*Ĭ, to observe, to be afraid, as in *k*âyati, was originally the same as *K*Ĭ, to gather, *k*inoti, and *K*Ĭ, to observe, *k*ikeshi and *k*ayate.

Without considering for the present these minuter differences, we may classify most of the roots in Â and Ĭ, according as in the past participle they have ĭ or î.

I. With participles in ĭ, *KH*Â, to cut, *kh*ĭta (also *kh*âta); DÂ, to divide, dita; DÂ, to bind,

[1] This phonetic process has been very fully treated by Benfey, Brugmann, Fick, and others.

dita; MÂ, to measure and to fix, mita; ŚÂ, to sharpen, śita (also śâta); SÂ, to bind, sita.

II. With participles in î, GÂ, to sing, gîta; DHÂ, to suck, dhîta; PÂ, to drink, pîta; SPHÂ, to swell, sphîta; ŚRÂ, to boil, śrîta (also śrâta). This root ŚRÂ points back to ŚAR, to boil. HÂ, to leave, hîna (also hâta).

The same change of final â to î and ĭ accounts also for GRÎ and GRĬ, to grow old, as derived from GAR, and for GRI, to approach, if derived from GAR, to approach.

(g) Another curious change is that of final û and îv, as in MÛ and MÎV, GÛ and GÎV, SYŪ and SÎV.

(h) Sometimes final â varies with u, as in DAR, DRÂ and DRU, SAR and SRU, to flow; SNÂ, to bathe, and SNU, to flow; possibly GÂ and GU, to sing; PRÂ and PRU, to fill, to flow; possibly DÂ and DU; see Darmesteter, De conjugatione verbi Dare, p. 24.

Mr. Edgren connects even YAM and YU, which would be analogous to DRAM and DRU, and KAMP and KUP; but when he goes further and derives these as well as YAT and YUG and YUDH from DAM, I doubt whether it is safe to follow him.

II. Dialectic Variety.

Yet all these phonetic modifications or affections, all the changes, in fact, which could safely be included under the comprehensive name of Phonetic Change, will not suffice to explain everything that has to be explained; nay, some even of the phonetic affections which we have just examined may require a different explanation as being not simply phonetic. We must here, as elsewhere, have recourse to Dialectic Variety, as the second force which, together with Phonetic Change, has helped us to explain

most of the riddles in the life of language. We must also be prepared for a certain number of purely accidental coincidences. Thus, because TUD and NUD both mean to push, it does not follow that initial T and N are interchangeable. Nor would TU*G* and TU*K*, both meaning to drive, warrant us in taking *G*, *K*, and D as variants. TRAP means much the same as TRAS, to be frightened, but this would not justify us in treating P as a substitute of S. A*ñG*, again, has much the same meaning as RA*ñG*, to colour, but whether R was either added or dropped is a different question.

Whatever view may hereafter be taken of these and similar cases, it is quite clear that for the present they cannot serve as material for phonetic rules. We cannot say that in a root surd and sonant letters may interchange, because there is some similarity between *S*AD and *S*AT, between KLATH and GRAnTH, between NÂDH and NÂTH. Mr. Edgren suggests indeed that DUL, to raise, might be connected with TUL, to lift, but how, he does not say, nor does Dr. Whitney, who silently adopts this suggestion, improve it by adding 'doubtless.'

In GÛRD and GÛRDH, d and dh seem to be interchangeable, in RIṄKH and RIṄG, to creep, kh and g; but such isolated cases can never justify the admission of a general phonetic rule. Many similar cases might be mentioned where consonants seem to have been added, or, it may be, dropped, with a certain purpose, but so sporadically as to make any general conclusions quite impossible. We have spoken already of the final as in BHYAS, which has been matched by GÆ and GRAS, BHÂ and BHÂS. We might add STU and STUBH; DÆ and D*Æ*S, DÂ and DÂ*S*; MLU*K* and MLUP, SA*K*

and SAP; *KH*I and *KH*ID. Or initially there might seem to be some purpose in SKAmBH and STAmBH, in *S*RAmBH and RAmBH, *SK*UT and *K*YUT; in *SK*AM and *K*AM. But all such combinations are extremely uncertain. Dr. Edgren compares *SK*AM with *S*AM rather than with *K*AM, but phonetically this would be without a single analogy [1].

Primitive Dialectic Stage.

Let us suppose that people engaged in cracking bones, breaking stones, or felling trees, accompanied these and similar acts by the sounds of KRA, TRA, or PRA, that is by sounds produced by a firm closing and sudden opening of the chief barriers of the human voice, the throat, the teeth, and the lips. At first the variety of these sounds would probably have been far greater, for there is no reason why the inherent vowel should have been a rather than i or u, or why the r should have been pronounced before rather than after the vowel. We might thus have KAR or KRA, TAR or TRA, PAR or PRA; and again KRA, KRI, KRU, KAR, KIR, KUR, etc. The very fact that roots had to be explained as sounds accompanying the acts of many people working in common would explain the original variety of such sounds, a variety due quite as much to the actual variety of individual sounds as to the more or less delicate perception, remembrance, and power of imitation possessed by different members of the same gang. No doubt every one of these sounds was uttered at first by one individual only, for everything in the world is at first done by one individual only; but that individual must be a leader of men,

[1] I see that Edgren took it from Boehtlingk and Roth's Dictionary, Whitney, as usual, from Edgren.

and the true leader of men is he who leads while being led. From the process of leading while being led, two results would naturally follow: If these sounds were to answer their social purpose, that is, if they were to be understood, it was necessary, either that one individual sound should in the end prevail and the rest vanish, or that by a kind of friction and compromise the various sounds which had been started should be merged into one. The result in both cases would be much the same; the fittest sound would survive, the others would slowly vanish, unless they could be made to answer some new and special purpose. By the first process, that of individual selection, we could quite as well as by composition account for roots, such as YUDH, to fight, YU*G*, to join (manum conserere), being adopted, because they happened to be the favourite terms of one great leader of men; by the second process, that of phonetic generalisation, the existence of such a root as YU, to join, might be explained, as being the most neutralised form of many more individual sounds, such as YUDH, YU*G*, YAU*T*, etc.

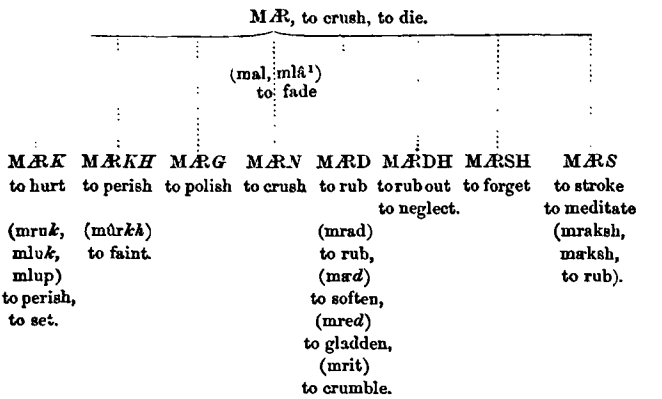
All this is, of course, purely hypothetical, and cannot be otherwise, because this first period in the growth of roots belongs to a past which we can reach by hypothesis only. All we can do is to look for possibilities by which the realities of language can be explained, though always keeping our minds open for new explanations, whether adapted to single cases only, or to whole classes of words. What in the interest of true science we have to guard against is that by positive assertion or reiteration, or even by wide popularity, one theory should seem to be more certain than any other; in fact, that we should

drift into dogmatism. I do not deny that YUDH and YU*G* may be explained as compounds of the root YU and the two roots DHÂ and *G*AN, but I cannot shut my eyes to the difficulties of admitting such compounds, nor can I see any intelligible explanation of such modificatory consonants as final n, t, v, d, *k*, all of which are likewise admitted by Mr. Edgren as radical suffixes (see also Benfey, Grammatik der Sanskritsprache, § 144, iv). I therefore keep my eyes open for the other explanation, namely that out of a large number of individual or occasional sounds, YUDH and YU*G* survived, because used by a powerful man or by a powerful clan, while YU survived as the most general sound by which the various acts of joining either in combat or in peaceful work had been expressed. These two hypotheses do not exclude, they rather complete, one another, and by either of them we could understand what we must learn to understand, namely the existence of clusters of roots some of which, both in form and meaning, are co-ordinate, while others are clearly subordinate.

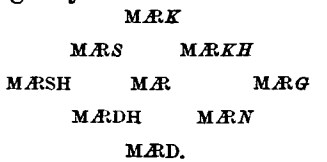
In my Lectures on the Science of Language (vol. ii. p. 347) I tried to show what I mean by a cluster of roots, selecting for that purpose the root MÆR and its relatives. There are two ways of representing the genealogical relationship of this family of roots. We can either look upon the simplest form MÆR as the ancestor of all the rest, or we may consider it as simply one out of many cognate roots, though perhaps as the most typical representative of the whole family.

Root MÆR.

In the first case our stemma would be something like this:


MÆR, to crush, to die.
(mal, mlâ[1])
to fade
MÆRK to hurt
MÆRKH to perish
MÆRG to polish
MÆRN to crush
MÆRD to rub
MÆRDH to rub out, to neglect.
MÆRSH to forget
MÆRS to stroke, to meditate
(mruk, mluk, mlup) to perish, to set.
(mûrkh) to faint.
(mrad) to rub, (mard) to soften, (mred) to gladden, (mrit) to crumble.
(mraksh, maksh, to rub).

In the second case we might represent the cluster in the following way:



Besides these nine roots which have survived in Sanskrit, there may of course have been many more which became useless after a time and were replaced by others. But taking those which have survived, I can hardly bring myself to believe that they are all later descendants of the one root MÆR. Some of them may be, but others lend themselves far more naturally to the second explanation, namely that they exhibit the working of Dialectic Growth, and represent to us the few remaining trees of a forest which may have been as many years in growing as it was in being cleared and rendered pervious to the rays of rational thought.

[1] I distinguish phonetic varieties by small letters.

The same remark applies to other clusters of roots. We know how often the aspirated mediae H, BH, DH, GH vary in Sanskrit and other Aryan languages, but it is difficult, and in many cases impossible, to determine whether any one of them was the original from which the others were derived, or whether we have to admit from the beginning a number of independent dialectic varieties. Thus we find radical forms, such as GÂH, GABH, and GADH; NAH, NABH, and NADH; *S*UBH and *S*UDH; GALBH and GÆRDH; GRABH and GRAH; DÆRBH and DÆR*m*H; SAH and SAGH; RUH and RUDH. In some cases the transitions from one into the other aspirate are so common as to fall under grammatical rules, but neither phonetic weakening or strengthening will fully account for them all. The Sonant Aspirates.

The same mixture of phonetic change and dialectic variety we see in such roots as DHUR, DHÛRV, DHVAR, DHVAL, DHRU, and by their side HUR, HVAR, HVAL, HRU, and even HÛR*KH*.

As to initial modifications, the most important one, that of the adding or dropping of the S, has been treated before (see p. 347). In some cases this S seems clearly to have been present, and then to have been dropped, but in other cases that view is hardly tenable, while dialectic variety would account far better for the facts, such as we find them. Initial Modifications.

The initial s, however, has produced some other modifications in roots which, though they have been treated by Kuhn and Ascoli, deserve to be considered here, particularly as they seem to me to

admit of a simpler explanation than those proposed by my illustrious predecessors[1].

In many cases a root beginning in the other Aryan languages with sk, appears in Sanskrit with kh. Sanskrit is not fond of initial sk, nor of st and sp. With initial sk the most important roots are SKAmBH, to support, SKAND, to jump, and SKU, to cover, while with the European members of the Aryan family sk is a very favourite initial. We can watch the phonetic process in Sanskrit. We find, first of all, the usual dropping of the initial s, as in KHAL and SKHAL, to stumble, KHAD and SKHAD, to strike, to be firm. Here the aspiration of the k seems clearly due to the permanent influence of the preceding s, which has exercised a similar influence in STHÂ for STÂ, stare, in STHAG, to cover, compared with στέγω and tego; in SPHÂ, to swell, compared with σπάω; in SPHUR, to tremble, to sparkle, compared with σπαίρω.

Under certain circumstances, owing possibly to the nature of the following vowel, this kh, originally sk, becomes palatalised. Thus we find *KH*ID, to cut, for skid, Lat. scindo; *KH*AD, to cover, for skad, from which we have also Sk. *kh*adman, fraud; *KH*UR, to scratch, for KHUR, to scratch, from which *kh*urikâ, razor, connected with σκύλλω, Lith. skurà, hide, ξυρόν, razor. Khura also, generally meaning hoof, is quoted in the sense of razor.

[1] Ascoli appeals for analogies to Prâkrit and Pâli, where initial s is often changed to h and placed after the following explosive or nasal consonant; e.g. asti becomes atthi, asmi (a)mhi. I look upon these Prâkritic instances as parallel illustrations of phonetic processes in Sanskrit, but I shall be able to show that Sanskrit itself supplies all that is necessary to account for the transition of sk to *kkh*.

But this is not all. There is a further change from sk or skh to ks, for we cannot doubt that kshurikâ, razor, and kshura, *ξυρόν*, is connected with *kh*urikâ (i. e. skurikâ); and in the same manner, that KSHA*N*, to scathe, to injure, is connected with KHAN, to dig, originally SKAN. Thus we find by the side of SKHAD and KHAD, to strike, a third form KSHAD, meaning to cut, to divide, which may be connected, though, I admit, the connection is doubtful. In kha*n*da, a division, a share, the lingual character may be due to the former presence of sh in ksh, unless, with Fick, we connect it with SKAR and SKARD, to break.

In this way we get the following possible varieties of an original SK, namely SK (K), SKH, KH, *KH*, KSH. All this is intelligible phonetically, and the other Aryan languages offer confirmatory analogies. The pronunciation ks for sk is no more than a phonetic illusion, which appears dialectically in Greek *σκίφα* and *ξίφα*, the steel in a plane; *σκίφος* and *ξίφος*, sword, in O. H. G. wefsa for vespa, and in English to ask, and to ax, and vice versâ, Italian lasco for laxo. Ascoli points out kh as a substitute for sk in Sk. vâ*ñkh*, as compared with O. H. G. wunsc, wish; in Sk. i*kkh*ati, as compared with O. H. G. eiscon, and likewise in so-called inchoative words, as ga*kkh*ati, *βάσκει*, etc. The transition from sk to *kkh* would pass through skh, *skh* (preserved in the Kâ*th*aka spelling) to *kkh*; or from sk to *sk* (preserved in Mâgadhî), *skh* and *kkh* (see Ascoli, Vorlesungen, p. 178). The former existence of *skh* seems to be indicated likewise by such derivatives as pra*s*-na from a stem pra*kkh*. If this stem had been pra*kkh*, a derivative formed by na would

have been prak-na or prag-na, while the fact that it is pras-na shows the former existence of a penultimate s.

What is more difficult to explain is the representation of ks by kt and kr in Greek. There can be little doubt that Greek κταν corresponds to Sk. KSHAN, but this represents a more original SKAN and KHAN. Thus ṛiksha, bear, is represented by Latin ur(c)sus, but Greek ἄρκτος; takshan by τέκτων; KSHI, to kill, by κτι. Such a transition, however, of s into t is very difficult phonetically. As to kr representing ks, the change might be more easily accounted for, but the instances themselves are not beyond the reach of doubt; for instance, KSHI, to rule, in uru-kshaya, widely-ruling, Gr. εὐρυκρείων; kshiprá, quick, and κραιπνός; kshana and κρόνος; kshápas, night, and Lat. crepus-culum[1]. The difficulty of admitting a phonetic correspondence between Sanskrit ks and Greek κτ was felt so much that some scholars preferred to look upon the Greek κτ as the original, and the Sanskrit ks as the secondary form. But this would cause still greater difficulties. We saw that the Sanskrit ks represents in many cases an earlier sk, and if the sk stood for tk, we should have to admit an initial group, t and k, which is opposed to the phonetic genius of most of the Aryan languages. Even kt, which Greek tolerates, is impossible initially in Sanskrit as well as in Latin. We must therefore retain the phonetic changes in the succession suggested above, sk, skh, kh, *kh*, ksh, and possibly Greek κτ and κρ.

[1] See Curtius, Grundzüge, p. 705.

If this phonetic law is once recognised, we are able to classify a number of roots, apparently widely separated from each other :—

(1) KHAG is mentioned as a root meaning to shake, to pound; from it khagâ, a whisk, and khagikâ, a spoon (coch-lear), khaga, fight, etc. Here the Teutonic languages give us A.S. sceacan, to shake, to swing; O.N. skaka, to swing, etc. It might be possible also to derive from this root, or the next, the name of the goat, as the jumping animal, Sk. *khâga*, goat.

(2) KHAÑG, to limp, is probably a modification of the preceding root, and appears in O.N. skakkr, skew, wry, and in Greek as σκάζω for skag-yo. If unprotected by s, initial k would follow Grimm's Law, and appear as h in O.H.G. hinchan, to halt.

(3) KHAK is given as a root in Sanskrit with the meaning of coming forth, appearing, and has been traced in the O.N. skaga, to jut out, and skagi, a low cape or ness, Vorsprung. Even the O.H.G. gi-scëhan, to happen, in German vorkommen, may spring from the same source, as well as the Old Slav. skakati, to spring, to dance.

(4) KHAD is given as a Sanskrit root meaning to strike, and to be firm, two meanings which seem very distant, but which may be accounted for, if we consider that what is being struck becomes firm[1]. The same root has also the meaning of chewing assigned to it, which is in fact the principal meaning of the Sanskrit root KHÂD. A third root KHID means to squeeze, to depress, and, as a neuter, to be depressed; a fourth KSHAD means to cut, to divide,

[1] See p. 382.

to eat; a fifth SKHAD, to strike, to be firm, to be depressed.

These five roots, SKHAD, KHAD, KHÂD, KHID, KSHAD, may be traced in the following words:—

(a) Chewing: cêna, from Sabine scesna for scedna; Lith. kándu, to bite; Zend *s*kenda, breach.

(b) Pressing, being depressed: κήδω, I torment; κήδομαι, I am sorrowful; Lith. skaud, to torment.

(c) Striking, dividing: σκάζω, to tear, to open; σκεδάζω, σκεδάννυμι and κεδάννυμι, σκίδναμαι, to scatter; scandula, scindula; Goth. skatts[1], piece of money (cf. κέρμα and minutum). It would be difficult to trace to this root words like O.H.G. scadôn, schaden, A.S. sceathan, Goth. gaskathjan. They presuppose a final t, and would have to be treated as derived from kshata, a participle of KSHAN, like *s*âtayati from *s*âta, a participle of *S*Â.

(5) *KH*AD, to cover, Zend *s*kad, to cheat, Sk. *kh*adman, fraud, cas-trum, casa, cassis. On root SKA in σκιά, σκό-τος, σκη-νή, Goth. skadus, shade, σκέπας, etc., see Curtius, p. 168; Ascoli, Vorlesungen, p. 172.

(6) KHAN, to dig, to destroy, seems a parallel root of KSHAN, to hurt, to kill (see also 18, *KH*Â). The corresponding form in Greek is κταν (also κτα) and κτεν, in κτείνω, κτόνος, where the transition of ks into kt is difficult[2]. Possibly the later form καίνω is in reality more primitive, and the insertion of t should be explained as in πτόλις for πόλις, and in κτένων, a split, from σκεδ, κεδ. The Greek σκάπτω, to dig, σκαφεύω, to dig, are secondary forms.

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[1] But see Schrader, Handelsgeschichte, p. 116.

[2] Curtius, p. 698.

(7) SKAND, to jump, up or down, rise or fall, Greek σχάζω, to fall, Lat. scando, descendo. Probably Sk. *kh*andas, metre, belongs to this root[1]. A parallel form may be SKUND, to jump, and KSHUD, to crush, and also to shake, from which to shoot.

(8) KSHAP exists as KSHAP and KSHIP. In Sanskrit KSHAP means to throw; the more common form is KSHIP. In Greek we have σκαπ or σκάπτω, to dig, but that belongs to the cluster SKA, SKAN, and KHAN. We have σκήπτω and σκίμπτω, which mean, however, to rest, the Latin niti, and not to throw, except in such derivatives as σκηπτός, thunderbolt. Σκῆπτρον, staff, sceptre, may have been originally either what was thrown or what we rest on, like Lat. scip-io. The Greek σκώπτω, to scoff, meant originally to throw or to insult. In Sanskrit kshapa*n*yu is insult, and kship is used in the sense of insulting. If so, it would account also for the German Schimpf and Schampf, meaning both joking and scoffing.

(9) The root SKAmBH, to rest, to prop, comes often in its derivatives very near to the root SKAP. Thus scamnum, bench, may be derived from either, though scabellum points to SKAmBH. Another root, STAmBH, to prop, which in Greek appears both as στεμφ and στεμβ, has often been claimed as closely related to SKABH[2].

(10) Though the origin of Sk. *kh*âyâ, shadow, is not clear (see 5, *KH*AD), still after what we have seen, of the true nature of an initial *kh* in Sanskrit, its

[1] Chips, i. p. 84; Rig-veda Sa*m*hitâ, p. cii.

[2] Kuhn in Kuhn's Zeitschrift, i. 139; iv. 32.

identity with Greek σκιά, shadow, σκότος, dark, cannot be doubted. Others have thought of the root KHYÂ, but this, according to native grammarians, stands for KSÂ, a secondary form of KAS. See also 21, SKU.

(11) SKHAL, to tremble (cf. 17), also KHAL, and possibly connected with them *kh*ala, fraud, Lat. scelus. Curtius admits a kind of relationship with σφάλλω, Sk. SPHAL, O.H.G. fallan, to fall; Fick compares σκαίρω, to jump, σκιρτάω, etc.

(12) The root KAR, to do, was originally SKAR, to cut, to shape, to make. We can trace back to it the Prâkrit kalpanî, scissors, Greek κείρω, to cut, to shear, σκάλλω, to shear, O.H.G. scëran, shears, and scar. The Sk. khara, thorn, and Greek σκόλοψ, thorn, may likewise be referred to this root. The root KAR (k*r*inâti and k*r*inoti) is also quoted in the sense of hurting and killing.

(13) SKARP, a derivative of the preceding, to cut; Lat. scalpo and sculpo; Lith. kerpù, to shear. Sharp has been traced to the same cluster, but doubtfully.

(14) SKAR and KAR, to pour out, to scatter; κεράννυμι, to mix.

(15) KHARG, to creak, to scratch, κέρχω, to be or to make dry, hoarse.

(16) KHARD, to vomit, σκορδινᾶσθαι, to gape, to retch; Old Slav. skarędŭ, repulsive.

(17) KURD, to spring (cf. 11, SKHAL), KHOD, to limp, κόρδαξ and σκόρδαξ, a dance; M.H.G. scherzen, to jump, Ital. scherzare.

(18) KHÂ (cf. 6, KHAN), to cut, *kh*avi, skin; Zend skâ, skyaiti, to cut, skata, hollow; σχάω, to slit, see σχάζω; κῆτος, hollow. This KHÂ, if for

SKÂ, may be traced back to a root SAK, to cut, in secare[1].

(19) *KH*ID, to split, Zend *sk*id, σκίδ-νημι, σχίζω, scindo; Lith. skëda, splinter; cf. 4, KHAD.

(20) KÛ, with â, to see, to consider; kavi, poet; κοϝος, seeing, knowing; cavêre (?); Goth. skavas, seeing, in us-skavas, provident.

(21) SKU, to cover, σκύτος and κύτος, hide; scutum, shield; A.S. scúa, shade, and sky, originally cloud.

(22) *KH*UR, to scratch, also KHUR; σκύλλω, to skin; scortum, hide; Lith. skurà, hide; Sk. *kh*urâ, lime; σκύρος, chipping of stone; Sk. kshura, khura, kshurikâ, razor, ξυρόν.

(23) Sk. kshupa, kshumpa, *kh*upa, shrub, bush, scopae, A.S. sceáf.

There still remain three roots beginning with palatal *sk* or *k*, namely *SK*AND and *K*AND, to be bright, *SK*AM and *K*AM, to sip, to swallow, and *SK*UT and *K*UT, to fall, to drop. The first root shows its *s* in the intensive form *k*ani-*sk*and, and in compounds such as Hari*sk*andra, etc. Without the *s* we find it in *k*andra, bright, moon, Lat. candere, Gr. ξανθός.

The root *SK*AM seems to exist in Sanskrit only, under its double form of *SK*AM and *K*AM.

The third root is given by Sanskrit grammarians as *SK*UT and *SK*YUT, and *K*UT and *K*YUT. It must not be confounded with *K*YU, to move, which in Sanskrit shows no initial *s*, though the parallel,

[1] See before, p. 357; and Ascoli, Vorlesungen, p. 173, who compares likewise scio, to know, originally to distinguish, to divide, to decide (Lat. de + caedo).

but unauthenticated root, KHYU, might be used to prove its former existence.

Residuum of real Roots.

We thus see that although it is possible to gather a number of roots, given by native grammarians as independent roots, into large clusters, their actual relationship often remains a problem difficult to solve. Is *KH*Â, to cut, to be derived from a root SAK, to cut, which does not exist in Sanskrit at all, but which may have existed in the Ursprache, and which by processes, well supported by analogy, may have been changed from SAK to SKÂ, from SKÂ to KHÂ (khâta) and *KH*Â (*kh*âta)? Or is it better to accept *KH*Â (*khi*), in Sanskrit at least, as an independent root? It is very difficult, as I said before, to discover in every case sure criteria for dividing simultaneous varieties from successive modifications, and I feel very doubtful, therefore, whether, for the present at least, we should go so far as Mr. Edgren. I can follow him down to 789 roots, or; deducting the roots *S*AD, BHA*N*, and A*T*, to 792 roots. Few scholars would hesitate at present to treat such roots as PÂ, to drink, and PÎ, to swell, SÂDH, to accomplish, SIDH, to be accomplished, RA*ñG*, to colour, and RÂ*G*, to shine, and again all roots like MAN and MNÂ as primary and secondary, MNÂ being actually derived from MAN, RÂ*G* from RA*ñG* or RA*G*, PÎ from PÂ. But I decidedly prefer to treat other roots, which Mr. Edgren considers as derivative, as parallel varieties, particularly as most of those which he calls derivative occur simultaneously in the earliest literary documents, while many of them can be proved to have existed even before the Aryan separation.

In several cases I doubt altogether the relationship

of the roots which he classes together. I do not see how NARD, to roar, could have become NAD, to sound, though NAD may be related to NAND, to rejoice. Still less can I follow him when he tries to connect YU*G*, YUDH, and YU with YAM and DAM, though I know quite well what analogies he has in his mind. Mr. Edgren is himself fully aware of the uncertainty of many of his conclusions, and, like a true scholar, he warns his readers against trusting too implicity in the reduction of the Sanskrit roots which he has carried out. From the 789 (792) roots which remained at the end of his last census, he deducts 156, which I should generally allow to be cognate, but not necessarily erivative. This leaves 633 roots. From these he deducts a new list of what he calls 'varied developments of some lost elementary roots,' leaving 587 roots. With regard to this last list, the only question is whether we must really admit with Mr. Edgren the former existence of such primitive elementary roots, or whether it is not far preferable to treat roots like KAM and KAN, TU*G* and TUD, as the natural effects of what I call Dialectic Growth in roots. I do not see how it follows that, because *S*U*K*, to shine, *S*UBH, to shine, and *S*UDH, to purify, leave the impression of being cognate roots, there must have been an original *S*U, from which they were all derived. Nor can I bring myself to see more than accident in the fact that a number of roots ending in m, such as AM, KRAM, DRAM, BHRAM, express motion, while others ending in n express sound, e.g. TAN, DHVAN, BHAN, RAN, SVAN. It seems on the contrary as if final m and n were often interchangeable in roots. Thus we find KAM, KAN, and

KÂ, to love, to rejoice; RAM and RA*N*, to rejoice; GAM, GÂ, and Greek BAN, Lat. ven-io, to go[1]. The character of a root, if we may say so, would seem to be embodied in the initial rather than in the final part, though even here most of our observations are very questionable. It has been remarked, for instance, that roots beginning with ku are mostly expressive of sound. So they are. We find in the Dhâtupâṭha KU, KU*K*, KU*G*, KU*N*, KUD, KUTS, KUP, KU*Ś*, to say nothing of KSHU, KRU*Ś*, KNU, KVA*N*, etc., all expressive of some kind of sound. But there are other roots beginning with ku which convey nothing, as far as we can judge, connected with sound, so that this argument also would not carry us very far[2]. I quite understand Mr. Edgren when he says that a more vigorous dealing with this subject would considerably reduce the number of 587 roots, but I am afraid that the vigour which we should have to employ for that purpose might lead us to where it has led other scholars who, like Dr. Murray, imagined that they could derive our language from nine roots, AG, BAG, CWAG, DWAG, LAG, MAG, NAG, RAG, SWAG, or who, like Dr. Schmidt, traced the whole Greek dictionary back to the root E, and the whole Latin dictionary back to the root HI[3].

With all these reservations, however, I do not in the least intend to detract from the high merit of the work which Mr. Edgren has carried out, and which seems to me to mark a decided advance beyond what had been achieved in the same direction

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[1] Ascoli, Due recenti Lettere glottologiche, 1886, p. 62.

[2] See before, p. 310.

[3] M. M., Lect. S. L., vol. i. p. 441.

by such eminent scholars as Benfey, Pott, and Curtius. Whether we shall have to admit in the end 1000 authenticated roots, or 992, or 880, or 816, or 633, or 587, the marvellous fact remains that out of this small number of roots the whole wealth of the Sanskrit language has been elaborated, and that the problem of the origin of the Sanskrit language—and to a certain degree of all the Aryan languages—is solved, if we can give an intelligible account of the origin of this small number of predicative roots, together with the few demonstrative or pronominal elements which were employed for the derivation of verbal and nominal forms. I call this a marvellous fact, because it would have sounded incredible to men such as Plato and Aristotle, nay, even to Descartes and Spinoza, and it seems to me to mark a new dawn not only in the Science of Language, but likewise in the Science of Thought.

Unauthenticated Roots.

We have still to consider a large class of roots contained in Pâ*n*ini's Dhâtupâ*th*a, which have not hihterto been authenticated at all. Their number amounts to about 1100, and would be considerably higher, if every root to which two incompatible meanings are assigned were treated as two. These roots have been carefully examined by Mr. Edgren, and the conclusions at which he has arrived seem to me in most cases very sound. He points out that whereas with few exceptions all authenticated roots are surrounded by a large family of words, few of these unauthenticated roots—only about 150 out of about 1000—have proved fertile at all, and even in their case their offspring seems often spurious. He likewise remarks that very few of them occur with prepositions in Sanskrit, and

that still fewer can be traced in any of the other Aryan languages[1]. He shows that there is a certain method in multiplying roots, and he hints that after a time grammarians may have taken a certain pride in adding new roots to those already collected by others. Still, admitting all this, this large number of roots not, or not yet, authenticated is startling, and it is but natural that scholars should be unwilling to brand them all as mere figments. Even if many of them should be mere grammatical figments, they are still interesting as showing that Pâṇini and his predecessors believed rather in the co-ordinate than in the subordinate character of roots, and were therefore ready to admit a vast dialectic growth of roots rather than the creation of one typical root, changed afterwards by modificatory suffixes. Nothing is more dangerous to a scholar than to find his own theories unexpectedly confirmed. Having myself postulated the existence of every possible variety of roots, I confess that finding in Pâṇini such strings of roots as TUP, TUMP, TUMB, TUBH, TUMPH, TURV, TRUP, or ARB, KARB, KHARB, GARBH, GHARB, ṄARB, TARB, NARB, PARB, BARB, MARB, LARB, ṢARB, SHARB, SARB, I kept up a lingering belief that after all these roots might have been deduced from real words, lost to us, because not employed in literature, but familiar to Pâṇini and his predecessors from their intercourse with people belonging to different parts of India, to different

[1] Fick in his 'Wörterbuch der Indo-germanischen Sprachen' traces 450 of the authenticated Sanskrit roots in other Aryan languages, but only 80 of the unauthenticated, and many of these very doubtfully.

villages, different schools, different castes, trades, and families. But after reading Mr. Edgren's remarks even that lingering belief has been much shaken, and I cannot resist the conviction that most of these unauthenticated roots are the result of a grammatical theory rather than of a careful analysis of actual words.

These changes of form possess their own peculiar interest, and they must often be settled first, before we can attempt to disentangle the changes of meaning with any degree of certainty. Thus, if we want to know whether the original meaning of ÎD was to beg or to honour, we must try to find out what phonetic changes are presupposed by the form ÎD. The lingual *d* postulates the previous existence of an r, the long î points back, as in ÎG and AG, ÎS and AS, to a more primitive a. Thus we arrive at ARD as an earlier form of ÎD, and this ARD means to hurt, to torment, fatigare precibus, i. e. to importune, thus showing that ÎD must have meant originally to implore, before it came to mean to honour[1]. Whether we may go a step further and derive ÆRD from ÆR, to move, to stir, is a question which I should not venture to decide, at all events not in the sense that ÆRD was derived from ÆR by means of a suffix D.

So again, if we wish to know how such a concept as lord and master, or to be a lord and master, to

[1] Boehtlingk (Z. D. M. G. xxxix. p. 533) connects îd with ish, to wish, and compares pîd and pish, which Benfey derives from pi and sad; Grammatik der Sanskritspr. § 142, iii. If we identify *d* with l, we might compare mish and mîl, but otherwise I see no analogy for a transition of sh into *d*. Mîl points to mith, pîd to pi*nd* and pibd, all very obscure formations

rule and govern, was elaborated, we should grope very much in the dark, unless we knew that such a root as ÎS, to rule (Goth. aigan, to possess, Anglo-Saxon ágan, to owe), and the substantive îsa, lord, may be traced back to the root AS, which means to reach, to obtain. This root had probably at first a less general meaning, and we find it used in Sanskrit as as-nâ-ti, he obtains his portion, he eats, and as-no-ti, he obtains a share, and with nasalisation as AmS, from which amsa, a part. From this root AS we obtain not only ÎS, to rule, but likewise a desiderative root AKSH, to reach, perhaps originally to wish or to strive to reach, and by again changing a to î, ÎKSH, literally to reach after, then to see or to perceive. In akshi, the eye, the same meaning has been anticipated, on the supposition that akshi means eye, because it meant originally the searcher or groper, just as netram means eye, because originally it meant the leader, from NÎ, to lead. It is most tempting, no doubt, to go a step further, and with Mr. Edgren to take NAS, to reach, as a derivative form of AS. Nor do I deny that it may be possible to explain the initial n of NAS and NAH as the effect of nasalisation. If AmS was under certain circumstances pronounced ANAS, that form may have become permanent (see p. 347, note 4). Frequent reduplicated forms, too, such as ânase, etc., may have led to the formation of a new root NAS. But until we can give a really satisfactory account of the accretion or the dropping of the initial n, we ought to wait, and be satisfied to treat NAS as an independent root which survived in the struggle for existence by the same inherent power which gave permanence to AS and AmS.

With regard to the meaning of roots Pâṇini is a useful, though not always a safe guide. His explanations of the meaning of every root have perhaps been somewhat unfairly criticised by those who expected more from him than the old Indian grammarian ever intended to give. His object seems to have been no more than to give a general and approximate definition of every root, without attempting an exhaustive account of all its meanings, still less a psychological analysis of the development of these meanings from the special to the general, or from the general to the special, from the concrete to the abstract and again from the abstract to the concrete. In several cases when he confines himself to saying that a certain root is used in the sense of gati, going, and himsâ, killing, we should, I believe, be not very far wrong if we took going in the general sense of intransitive, killing in the sense of transitive action, Pâṇini being satisfied with this general indication, and leaving the more special application of a root to be elaborated by others. Sometimes he finds it impossible to define the signification of a root by anything but the root itself, or by the negation of its opposite meaning. Thus we find that Pâṇini explains MÂ simply by mâne, measuring, VAS by nivâse, dwelling, DVISH by aprîtau, not loving, Sometimes it seems as if the meaning had only been added in order to distinguish two roots identical in sound, but differing in meaning. Certainly no attempt is ever made by Pâṇini to trace, what to us is of the greatest interest, namely the gradual development in the meaning of roots. This we have to discover for ourselves, and though much has been done in this respect by the

Meaning of Roots.

makers of dictionaries, very much remains to be done.

Generalisation and Specialisation of Roots.

The impression left on our minds by a study of Pâṇini's collection of roots and of the meanings which he assigns to them would certainly lead us to suppose that most roots had in the beginning a general meaning. Roots meaning to go, to move, to hurt, to kill, to sound, etc., form a large majority, and this very fact has often been dwelt on as showing the uselessness of Pâṇini's definitions. Still, the same idea has very much influenced the researches of the students of the science of language, nor can it be denied that during the periods which we have the best opportunity of watching in the growth of language the tendency in the development of the meaning of roots is certainly from the general to the special.

Influence of Prepositions.

That development is very much influenced by the use of prepositions, an influence so great that in several, nay in many cases, the same root can be made to convey not only very varying, but sometimes diametrically opposite meanings. This fact is hardly ever taken into consideration by Pâṇini. He gives to KHAN, for instance, the meaning of tearing or breaking open (avadâraṇa). We know that in real language this breaking open is always confined to the breaking of the soil, and that KHAN means, to all intents and purposes, to dig. The same root, however, with the preposition ni, assumes the meaning of digging in or making firm[1]. At a time when houses consisted of a few piles

[1] The two meanings of striking and being firm are combined also in KHAD; see p. 369.

driven into the soil, covered with reeds and leaves, what was dug in naturally assumed the meaning of firm. In Zend the name for house was kata, i.e. dug, possibly hole, cave, and this name still lives in the Persian kadah, house[1]. With the preposition pra, however, the root KHAN means to undermine, with ud, to destroy. Thus GRAnTH means to tie together, but with ud, to untie. A*ñK* with apa means to drive away, with prati to honour. NÎ, to lead, with vi, means to train, to educate, with pra to desire, with pari to marry. NAM with ud means to raise, with ni, to bow down. MU*K* is to let loose, but with prati, to fasten.

Now it may happen that one of the meanings depending originally on a certain preposition, came to prevail to such an extent that the root, even without the preposition, retained the same meaning. Thus NAM means originally to bend, but with pra it comes to mean to bend forward, to pay respect, to worship. In the end, however, the simple NAM may be used to convey the same meaning of worshipping, and the substantive namas never means bending, but always veneration.

Special Meaning original.

But although during the time when the growth of language becomes historical and most accessible therefore to our observation the tendency certainly is from the general to the special, I cannot resist the conviction that before that time there was a pre-historic period

[1] Schrader, Sprachvergleichung, p. 405. The name for bread also, as being baked between layers of hot ashes, is derived from the same root, the Persian nân, Beluchi naghan; Schrader, l. c. p. 373.

during which language followed an opposite direction. During that period roots, beginning with special meanings, became more and more generalised, and it was only after reaching that stage that they branched off again into special channels.

If we take, for instance, such roots as now convey the most general meanings, such as being and doing, we can in most cases discover, or, at least, guess their former more special purports. AS, to be, meant to breathe, BHÛ, to be, to become, meant to grow, VAS, in I was, meant to dwell, VÆRT, in German werden, meant to turn, KHAK, in German geschehen, vorkommen, meant to jut out[1].

To do meant originally to set, like Sk. DHÂ.

To do. To work may have been originally the Sk. VÆRG, to twist, to strip. The Sanskrit TAKSH and TVAKSH, to make, to prepare, was originally conceived as cutting and shaping wood. From it we have the substantive tvákshas, vigour, and the adjective tvákshîyas, very strong. The Sanskrit tákshan, carpenter, is the Greek τέκτων. Greek has also τύκος, chisel. Tvash-tar means a carpenter, but also maker and creator. The verb takshati or taksh-noti still retains the meaning of cutting, splitting and carving, but very soon we find it applied to the making of anything, a carriage, a thunderbolt, heaven and earth, also a thought, a word, a hymn, till at last it came to mean simply to make, as Rig-veda iv, 36, 3, pitárâ púnar yúvânâ karáthâya tákshatha, 'you made your parents young again to walk.'

Pânini assigns to TVAKSH and TAKSH the meaning of thinning (tanûkarane). But he gives

[1] This process is repeated in modern languages, e.g. to grow bold, to wax angry, to turn pale; see A. Kühn, Wurzelvariation, p. 6.

another root TAKṢH (Dhâtup. xvii. 13), which he explains by tvakane, i.e. skinning, and in this sense tvák, skin, lit. what has been cut off, would have been traced back by him to the same root.

At all events the transition from cutting, shaping, trimming to making in general is perfectly clear. Even in Homeric times the τέκτων represents the stone-mason, the carpenter, the ship-wright, the wheel-wright, the worker in horn, in bone, in ivory, the turner, the joiner, the belt-maker[1] and other handicrafts, so that the generalisation of its meaning became almost a matter of course. Τέχνη means art in general.

It is most likely that the German schaffen, too, from which Schöpfer, creator, meant originally to scrape, to polish, and then to make. This root appears in σκάπ-τω, to dig, to hoe, σκέπ-αρνον, a carpenter's adze, Lat. scabere, scabies, scobîna, file, Goth. scaban, scôf, to shave, and skapjan, skôp, to shape; O.N. skapt, shaft; and skip, ship. Even shape and ship, in friendship, would in the end come from the same source.

Another root RAK, to make, seems to me to have been applied at first to the arranging, crossing, and chaining of threads that were to be twined and platted, thus accounting for the Greek ῥάπτειν, to twist, to sew, and for the Lithuanian rìnk-ti, to collect[2]. Even the Sanskrit KṚ, to make, I do not hesitate to connect with SKṚ, in the sense

[1] See Riedenauer, Handwerk und Handwerker in den homerischen Zeiten, p. 96; Schrader, Sprachvergleichung, p. 397.

[2] See H. Möller, K. Z. xxiv. p. 457. P. Schrader, Ling.-histor. Forschungen, p. 175, presupposes ϝράπ-τω and compares Lith. werpù, to spin.

of cutting, shearing, in fact with the same root that gives us to shear, and in the Greek κείρειν and σκάλλειν. In Sanskrit we find k*ri*-nâti having the sense of cutting and hurting, and the compounds upaskirati and pratiskirati clearly mean to split, to tear with nails, having nothing to do with kirati, to scatter. The meaning of cutting comes out very curiously in the Prâkrit kalpayati, to cut, and in kalpanî, scissors, etc., Sk. k*ri*pân*î* (p. 372).

These may seem bold combinations, but they are not without ample analogies in the history of language. In Latin materies meant wood, before it came to mean matter. In Greek ὕλη meant wood, before it was used in the sense of substance. In Sanskrit dravya, matter, if derived from dru, tree, would show the same transition of meaning, while, if derived from DRU, to run, to cause to melt, it would have had the special meaning of metal, before it took the general sense of matter.

The name for tree or wood, dru, has been derived from the root DÆR, to tear off, to decorticate, showing that the tree was conceived and named as the object and product of the act of felling, chipping, peeling, and shaping a tree, just as δέρ-μα was the skin torn off from an animal and d*ri*-ti in Sanskrit a leather-bag.

To be strong.

Pân*i*ni assigns to DÆR*m*H the very general meaning of growing (v*ri*ddhau), which is probably intended for growing strong and firm. In all the passages where this root occurs, whether in nominal or verbal derivatives, firmness and strength are certainly the meanings conveyed by it. Still it seems far more likely that DÆR*m*H had originally a more special power,

akin to that of DÆRBH, which is explained by Pâṇini by darbhe, i.e. tying together into a bunch. The most primitive method of getting compact and strong beams, girders, wheels, etc. consisted probably in tying together bundles of reeds or pieces of wood. We know that what is now a fluted column with its capital of drooping leaves was originally a bunch of reeds or lotus-stalks closely tied together, with tufts of leaves or flowers falling over the topmost band. The Indians in America still speak of weaving their grass lodges. In building them four poles were placed upright, at equal distances to form a square, each having a fork at the upper extremity for the reception of cross-pieces upon which to construct a roof. The sides of the square were closed by placing thin willow poles, vertically side by side, after which the broad leaves of water grasses and rushes were woven[1] into them horizontally, from side to side[2]. The Sanskrit *dridha*, strong, would therefore originally have meant the same as compact, concrete, thickset.

DAM, to shape.

The root DAM, which exists in English as to tame, in Latin as domare, means in Sanskrit to control (upasame), also to be controlled. But if we ask how dám and damá could have the meaning of house (dampati, house-lord, dámûnas, belonging to the house), we should have to admit a more primitive and special meaning for the root DAM, namely that of joining, forcing, driving and bending beams and planks together so as to turn

[1] This expression throws a curious light on the passage in Plato's Critias, 116, B: *καὶ τῶν οἰκοδομημάτων τὰ μὲν ἁπλᾶ, τὰ δὲ μιγνύντες τοὺς λίθους ποικίλα ὕφαινον παιδιᾶς χάριν.*

[2] Proceedings of the American Philosophical Society, 1886, p. 297.

them into some kind of shelter or cabin in which man can live. We should probably have to discover the original intention of DAM in the Greek δέμω, to build, δέμνιον, bedstead, and its secondary application in δαμάω, in δμώς, slave, ἀδμής, unmarried, and δάμαρ, wife.

Vagueness of these speculations.

The weak point in these speculations is that they are very apt to lead us too far. Mr. Edgren, for instance, thinks that we ought to connect DAM with YAM, to curb. This by itself is doubtful. Besides, what is the typical meaning of YAM? Professor Whitney tells us that it means to reach. He might as well say that it means to fly. The first meaning of YAM, as any one may see who consults Boehtlingk's Dictionary, is to hold, to support. This meaning appears clearly in such passages as Rv. i, 59, 1, sthūnâ-iva gánân upamít yayantha, thou, Agni, supportest men like a strong pillar. In the Âtmanepada the same root has the meaning of holding oneself, standing, being strong; e. g. Rv. viii, 3, 6, índre ha vísvâ bhúvanâni yemire, for on Indra do all beings rest. But it likewise is used in the sense of keeping oneself under, submitting, or obeying; Rv. iii, 59, 8, mitrâya pâñka yemire gánâh, the five tribes kept to or obeyed Mitra. Soon, however, to hold comes to mean to use or to wield. Thus the gods are said to hold firm or wield their weapons, or to hold forth with their weapons. They are said to hold the reins, to hold and manage anything, to hold and keep, or, as we should say, to protect and maintain, the dwellings of man.

To hold, then, assumes the meaning of to restrain, to subdue, or even to rule. Applied to the scales

of a balance, it means to draw down, e.g. Sat. Br. yatarad yamsyati, which of the two will prevail. Prati-yam means to be worth. Applied to the senses, they are said to be yata, controlled or subdued.

To hold or hold out something for somebody else came to mean to offer, to give, which is sometimes given as the fundamental meaning of the root. With prepositions this root is capable of the most varied application.

Thus anu-yam, to hold after something, means to aim or to throw at a goal; in the Âtmanep., to strive after. With â the root yam means to draw out, to lengthen; also to draw the bow, to aim. Âyata means simply long, and, as an adverb, intensely, violently. Â-yam also means to draw or bring near.

With vy-â, yam takes the meaning of tearing asunder, and in the Âtmanep. it means to exert oneself (sich anstrengen, sich zerreissen). The participle vyâ-yata often means strong.

With ud the meaning of yam changes to lifting up, and likewise to offering. In the Âtmanep. it is used for to exert oneself, to undertake something.

With upa, yam comes to mean to seize, to take for oneself, more particularly to take a wife or to marry.

With ni, yam means to restrain, to stop, to subdue. The participle niyata is used for what is settled, constant, regular.

With pra, yam chiefly means to hold forth, to offer. As upa-yam meant to marry, pra-yam is used for giving in marriage. The participle pra-yata often means attentive, serious, solemn.

With sam, yam means to hold together, to tame, to control. The participle sam-yatah means self-restrained, and also prepared, ready.

There is, therefore, some similarity between the roots DAM and YAM, particularly in such special applications as δάμ-αρ, wife, and upa-yam, to marry, but whether YAM is really a secondary form of DAM, whether in fact the two roots are historically connected at all, is more than, for the present at least, we are able to say.

Mr. Edgren, however, goes, as we saw, even further. He not only connects DAM and YAM, but goes on to YUP, to join, YU, to harness, YU*G*, to join, YUDH, to fight, and treats all these roots as mere varieties of one common type. There are, no doubt, phonetic analogies for the transition of YAM into YU, but YU may also assert its own independence, quite as much as YAM, and we ought to admit frankly that we possess as yet no criteria to guide us in deciding in favour of the one or the other opinion.

YU, to join.

YU and YU*G*, to join or to be united in friendship and love, seem clearly to belong together, and if YUDH, to fight, meant originally to join in battle, to come to close quarters, this also may be traced back to the same source. But with every step in advance, the ice becomes thinner. As we find RUP by the side of RU and RU*G*, we might perhaps accept YUP by the side of YU and YU*G*. YUP means to check, and by a great effort this meaning could be got out of joining, namely if we remember that to join or to tether a horse to a post is the same as to hold and check it. But when we come to YU and YU*KH* with the sense of separating, it seems far preferable to admit two independent roots than to suppose that the same root could from the beginning have had two such opposite meanings.

Whenever there are two roots with two opposite meanings, we must always try to explain it. The problem that has to be solved here is the same as in the case of ready-made words which have two opposite meanings. We must try to trace the gradual steps by which the human mind travelled from one pole to the other. That this can be done in many cases, I tried to show in my Lectures on the Science of Language, vol. ii. p. 273[1], by tracing words expressive of black and white, good and bad back to a common origin. But with roots the case is far more difficult, because their changes belong to times without a vates sacer. All we could do would be to suppose that YU, used with a preposition such as vi in the sense of unjoining or separating, retained that meaning even without that preposition. But such a supposition would be a mere guess, and hardly within the pale of scientific thought, while the fact that there are in all languages homophonous roots has never been contested[2].

Many possibilities.

In fact our road in running these old roots to earth is beset with so many dangers that few scholars only have ventured to follow it. The sphere of possibilities is so great that one hardly dares to assert anything for certain. Fick, for instance, who takes the root NAD as having originally expressed vibration, then sounding, roaring and crying, identifies it with the Zend nad, to chide, and traces it further in the Sk. NID, to blame. According to him, nada and nadî, Sanskrit names for river, were

[1] See also Hibbert Lectures, p. 43.

[2] See before, pp. 183 seq.

derived from this root NAD, in the sense of roaring. This is, no doubt, quite possible, but if, as Fick supposes, NAD meant originally to move and then to vibrate, it would be equally possible to derive nada, river, from that root, and take it like rivus and flumen, in the sense of running water.

NAM.

This difficulty meets us again and again. It is very likely, for instance, that the root NAM expressed originally some peculiar kind of bending, such as the bending of wood in order to adapt it for the purpose of a wheel. In that case nemi, the felly of a wheel, might be a remnant of that primitive special meaning. But it is possible also that NAM had already assumed the most general meaning of bending, before it was specialised again in the name of nemi, felly.

DÂ, to give.

Who can tell whether the root DÂ ever referred in the beginning to some special kind of giving? All that lies beyond DÂ seems gone, and though we may be certain that no such general or faded act as giving could have evoked its own special sound, it is useless to speculate on the antecedents of a root which had assumed its colourless meaning long before the Aryan family was broken up. 'To give' may have been simply to offer, as a mother offers her breast to her child; or it may have been to distribute what was the common property of a family (DÂ, dyati, to divide); or it may have been to surrender something which had become one's own individual property: all this is possible, but there are no facts in the history of language to enable us to decide in favour of one or the other of these opinions. In modern languages this is very different, and when we see from what special be-

ginnings the most general concepts have often sprung, we may gather courage in our treatment of more ancient roots. To give, for instance, in German, is schenken, also used in the sense of suckling. This can be traced back to schenken in the sense of pouring out wine, as in einschenken, to pour out, Schenke, a public-house. But this schenken again comes from shank, German Schenkel, bone of the leg, which, being hollow, was used for drawing beer or wine from a barrel. Who is to discover such missing links in the darkness of the twenty thousand years ago?

The process of specialising general roots, which is so much more prominent in the historical period of language than the process of generalisation, is often only a respecialisation of roots, at first special, then general, and at last special once more. Respecialisation.

It has often been remarked that many roots in Sanskrit have the very general meaning of to go assigned to them. But in many of them we can still discover traces of more special kinds of going and moving. Thus KRAM means to stride (pâdavikshepe), VRA*G* to walk (mârgasa*m*skâragatyo*h*), SÆRP to creep (gatau), DHRA*G* to glide (gatau), STIGH to mount (âskandane). I, to go.

Our own verb to go is not connected with the Sanskrit root GAM, to go, but had in the beginning a very special meaning. We shall often find it useful to study the transition of meanings in modern languages[1] in order to gather *GAMH*, to kick.

[1] For generalisation of special, and specialisation of general meanings in French, see Brachet, Etymological Dictionary, Introduction, § 13.

courage in tracing roots of a general meaning back to their original and special concepts in ancient times.

When we speak of children eager to get something, we say in German, Sie zappeln darnach. There is no exact counterpart of this verb in English, but it means to kick with arms and feet in trying to get at something. Now in Sanskrit a root *GAMH*, meaning to kick or strike with the feet, is used chiefly of birds striking with their wings. Another root, *GEH*, which is wrongly interpreted by gaping, seems to me a mere variety of *GAMH*[1], and to mean struggling or striving.

This root *GAMH* would explain O. H. G. gingo, desire, gingên, to desire[2].

But it also exists under another form in Gothic gangan, O. H. G. and A. S. gangan, now the regular verb for going, but meaning originally kicking one's legs. This gangan was afterwards contracted into gân, gên, and gôn, and finally became the modern German gehn, to go, which is generally connected with the Sanskrit roots GAM and GÂ.

The roots I and GAM, however, disclose nothing special, they simply mean to go. But out of that general meaning an endless variety of new meanings can be and has been evolved, with or without the aid of prepositions or any other distinguishing elements. This process of specialisation goes on uninterruptedly in all living languages. In German, for instance, gehn means to go away and to come near, as in Geh, allez, apage, and in nach Hause gehn, to go home. Lass mich gehn means Leave me alone; lass

[1] On the transition of amh into eh, see p. 356.

[2] See Grimm's Wörterbuch, s. v. gehn.

es gehn means Say no more about it. Sich gehn lassen is used for being free and easy. Die Uhr geht means the watch goes, der Teig geht, the dough rises, das Geld geht nicht, the money is not current, sein Mund geht, he is constantly talking. Es geht nicht is it is impossible, es geht an, it will do, Wie geht es, how do you do, es geht ums Leben, it is a matter of life and death.

If we see these various shades of meaning of one and the same verb, to go, why should it seem strange that in Greek, for instance, *οἴμη*, a song or lay, should come from the root I, to go? We have *οἶμος ἀοιδῆς*, the course of a song, and this *οἶμος*, way, is the same word as the Sanskrit ema, way, from I, to go. The derivative verb *οἰμάω* means to swoop upon, and this too comes indirectly from the simple root I, to go. Again, *οἶτος*, fate and doom, can hardly come from any other source, and usage alone can account for its being always used in a bad sense, though it was originally no more than the Latin itus in reditus, return, and differing from the Latin iter, itineris, journey, in its derivative suffix only.

The Greek *ἰθύνω* means to make straight, and it comes from the same root I, to go. Going, *ἰθύς*, was used in the sense of going straight, hence *ἰθύω*, to push forward, and also to desire, and *ἰθύνω*, to stretch forward, also to right.

With another application *ἴ-της* comes to mean going, hasty, impudent, *ἰ-ταμός*, hasty, *ἴθαρος*, quick, in Sanskrit i-tvara, going, in Greek *εἴθαρ*, quickly, at once. *Ἰσθμός* also was originally no more than a road, vadum, in O.N. eið[1].

[1] Bugge, in Bezzenberger's Beiträge, iii. p. 100.

In Sk. âyús, man, and ấyus, life, the root I, to go, is used in the sense of living, and as âyus would in Greek become αἶος, we may treat αἰεί for αἰεσι, αἰές, and αἰέν, in the sense of 'always,' as springing indirectly from the same root.

Another derivation in Sanskrit is évas, way, manner[1], and the Latin aevum, age, age being itself a descendant from aevum (aevitas, aevitaticum), while a further step leads us on to aeternus, i. e. aeviternus.

Homophonous Roots.

But though the pliancy of roots is very great, and the variety of meaning expressed by one and the same root often quite bewildering, we saw that there was no necessity why we should under all circumstances admit one root only, in cases where two or three homophonous roots would solve our difficulties better. There are roots which have the same sound, and which no one would feel inclined to identify, such as GÂ, *g*igâti, to go, and GÂ, gấyati, to sing; GÆR, gr*in*âti, to sing, and GÆR, *g*âgarti, to wake; *GÆR*, *g*arate, to sing, and *GÆR*, *g*arati, to waste away. If the principle had ever been firmly established that homophonous roots must be identical roots, we should have to accept almost any connecting links by which meanings, apparently the most heterogeneous, might be held together, and brought back to one and the same starting-point. We might, for instance, argue, more or less plausibly, that as TAKSH, from meaning originally to cut, comes to mean to shape (zuschneiden), to make, therefore KÆRnT, to cut, might be identical with KÆRnT,

[1] The same transition of meaning from walk, way to manner, we see in Sk. âkâra, manner, and Lat. môs, if derived from meare.

to spin, and with *KÆRT*, to join, because in the earliest time spinning and platting were frequently combined (cf. crâtes, mat, *κάρτ-αλος*, basket), and platting consisted in cutting and slicing reeds together. Again, DÂ, to cut, would have to be identified with DÂ, to bind, because in many cases binding is performed by cutting small threads and slicing them together, just as to sort, for instance, means to separate, but also to join.

Fortunately, however, we are not driven to these forced explanations by any inherent necessity, and we ought not to resort to them, except in cases where we have real analogies to guide us. It is as yet a purely gratuitous assumption that one sound can at first express one concept only. It rests on another assumption, that there is some mysterious bond between the sound and meaning of a root. But even if there were such a bond, that would not exclude the perfect freedom with which at different times and in different places similar or even identical sounds may accompany different acts which they afterwards signified.

There is, for instance, a root *Æ*, which is explained by such general terms as to go, to send. Root *Æ*. But the question is whether *Æ*, AR, to go, red. perf. âra, is really the same root which we find in *ri-no*-ti, *ὄρ-νυ-μι*, to excite, red. perf. *ὄρ-ωρ-α*, I have risen, or-ior, or-igo, and again in ar-us, wound, and ar-is, enemy. Curtius holds that the Greek and Latin languages split the root *Æ* into three, namely AR, in *ἀρ-αρ-ίσκω*, ar-tus, *ἀρ-όω*; ER, in *ἐρ-έσσω*, rêmus; OR, in *ὄρ-νυ-μι*, or-ior, etc. The same distinction, however, though not expressed phonetically, at least in writing, may have existed

in Sanskrit from the very beginning. We might then distinguish three roots:

(1) Ṛ, with the meaning of to stir, to raise, and intransitively, to rise. This we find in Sk. *ri-no-*mi, and iy-ar-mi[1], in *ὄρ-νυ-μι*, *ὄρ-ωρ-α*, orior; in *ἰάλλω* (*ἰάρjω*), to send, to shoot, O. H. G. îlan, eilen, and in Gr. *ἐλ-αύνω*, to drive.

Specially applied to the stirring of the soil, the root Ṛ took the meaning of ploughing. From this we have an old name of the earth, i*d* for ir, also i*d*â, and in Greek *ἄρ-ουρα*, in Latin ar-vum. Derivative words are found in Greek *ἀρόω*, *ἄροτρον*, in Latin arare, aratrum, in Gothic arjan, to ear, etc.

A second special application of the same root to the stirring of the water is found in Sanskrit ar-itra-s and aritra-m, rudder, aritâ, a rower, in Greek *ἀμφ-ήρ-ης*, or *ἐρέτης*, *ὑπερέτης*, *ἐρέσσω*, *ἐρετμός*, in Latin re(s)mus[2], remigium, triremis, in A.S. âr, in Lith. ir-ti, to row.

(2) A second root Ṛ expresses the concept of going, and more particularly of regularly going, of proceeding, succeeding, fitting, as we still say il va bien, es geht, for it fits. From this Sk. *rik-kh*ati, *ἔρχομαι*, *ἦλ-υθον*, *ἔπ-ηλυς*; Sk. *ri*ti, way, manner; *ri*tu, season, ara-s, spoke of a wheel, *ἀρ-ιθμός*, number; *ἀρ-θρόν*, membrum, cf. Sk. gâtram; ar-atni, elbow, *ὠλ-ένη*, ulna, *ἄρ-μενος*, fit, *ἀρ-ηρότες*, fitting together; *ἀρέσκω*, to please (*ταῦτα ἀρέσκει μοι*, cela me va); artus, link; Goth. ar-ms, arm, but not *ἀρ-μός*, link.

[1] Rv. i, 56, 4: íyarti renúm, he stirs up the dust.

[2] Bopp, C. G. § 817a, writes: 'ruodar, what makes flow, from *ῥέω*, connected with rutrum, *ῥέθρον*, and radically perhaps with remus also.'

Used in a transitive sense this root expresses the idea of making things to go, fitting them, as in ἄρ-σα, ἦρ-αρ-ον, I fitted, ἀρτίζω, I prepare, artare and artire, to join.

(3) Quite independent of this would be a third root ÆR, in the sense of hurting, wounding, attacking. This we find in the ar-us, wound, ar-is, enemy, *ri*-tis, attack, ἔρ-ις, quarrel, ἐρ-έθω, ἐρ-εθίζω, to annoy [1].

But besides these three roots there is in Greek and Latin a root AL, which is supposed to represent an original AR, and which means to grow, and to make grow. In the former meaning it has the vowel o (ol), in the latter generally, though not always, the vowel a (al).

From this root with the meaning of growing, we have:—

(1) Co-alesco, to grow together, as in Gell. 12, 1, 11, nihil interesse putat cujus in corpore cujusque ex sanguine concretus homo et coalitus sit.

Ad-olesco, adolevi, adultum, as in Plin. 9, 16, 23, § 56, Non sine imbre adolescunt arundines.

Prôles, what grows up, children; proletarii, the great growing mass of the people, the plebs.

Sub-olesco, to grow up; suboles and soboles, a sprout, offspring.

Ind-oles (indu=in), the same as ingenium; cf. indi-gena.

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[1] See M. M., Vedic Hymns, p. 65; Curtius, Grundzüge, p. 340. In-rito, to irritate, can hardly belong to this cluster, on account of its long vowel. It has been referred to Sk. râ, to bark.

Ab-olesco, to decay, to vanish; as nomen vetustate abolevit.

Obs-olesco[1], êvi, êtum, to decay, to wear out, as in vestis obsolêta.

(2) In the sense of making grow, we find the same root in Ălo, alui, altum, to nourish, as in Plaut. Rud. 3, 4, 36, Athenis natus altusque. Altus, high, like great from to grow.

Alumnus, foster-son, nursling, pupil.

Al-mus, kind, genial, particularly of Ceres, Venus, Terra.

Ab-oleo, -evi, -olitum, -êre, to destroy, to remove.

Ad-oleo, -evi, -ultum, to increase the gods, to worship them. Non. 58, 21; Virg. Aen. i, 704, flammis adolere Penates.

Lastly elementum, lit. what makes grow, for olementum, the o changed into e as in bene, velle, etc.

It cannot be denied that to go, as the original concept of ĀR, might have been developed so as to express both the peaceful going together and the aggressive going against a person. Some scholars might even maintain that the idea of striking the earth or the water in ploughing or rowing was derived from that of attacking, nor would it be impossible to find some analogies for a transition of meaning from going to growing, and making grow. But all this could only be approved of or tolerated if it had been established once for all that identity of

[1] Bopp, Comp. Grammar, § 96, remarked, 'that we divide with Vossius ob-solesco, not with Schneider, obs-olesco, requires no excuse.' Yet Schneider was a safer guide.

sound in roots proves always identity of origin, a principle which, as far as I can judge, receives no support either from theory or from facts. Professor Fick, for instance, in his Wörterbuch, often keeps homophonous roots apart, but quite as often he assigns the most incongruous meanings to one and the same root. He distinguishes, for instance, between SKARD, to shine, SKARD, to break, SKARD, to vomit, and SKARD, to jump, where the meaning of shining (éclater), breaking, and vomiting (brechen) might easily have been reconciled. But he treats SKAR, to divide (cer-no), KAR, to feed (κόρος), and KAL, to conceal (oc-culere), as mere varieties of the root SKAR, to pour out, to scatter, which seems to require a very great effort of combinatory imagination.

Many of the questions connected with the original meaning and the later development of roots can at present be answered provisionally only.

SVAR, to shine and to sound.

Should we separate, for instance, the root SVAR, to sound, from SVAR, to be bright, to glisten? It is true that the second root has yielded no verbal forms, but svàr, sky, sûra and sûrya, sun, require the admission of such a root. This being the case, it seems possible, even for us, to comprehend light and sound under the same concept of clearness or brightness, and one feels all the more inclined to admit the same process for the poetical language of our earliest ancestors.

BHÂ, to shine and to sound.

Again, may we admit a relationship between BHÂ and BHÂS, to shine, and BHÂSH, to speak? The analogy of φαίνω and φημί is tempting, but hardly convincing. Curtius, according to his system, admits a primitive root BHÅ, which became specialised as BHAN, BHÅS, BHAV,

and BHAK. The simple root he sees in φη-μί, φά-τις, φω-νή, Sk. bhâ-nus, light, sun, Lat. fâ-ri, fâ-ma, fâ-s. The root BHAN appears, according to him, in φαίνω, φαν-ερός, φά-σις, Sk. bhan-âmi, I sound, bha*n*-âmi, I speak. The third form BHÂS occurs in Sk. in the sense of shining, and as BHÂSH, speaking. The fourth form BHAV is traced by him in φαῦ-ος [1], φῶς, light, and -φάων; the fifth in fac-ies.

From my own point of view I should look upon these five roots as parallel varieties, but even then certain phonetic difficulties remain. Curtius could not explain the transition of s into sh, as in BHÂS and BHÂSH (not Vedic), nor of BHAN into BHA*N*, for the change of a dental into a lingual always requires a motive. It may be that the pronunciation of the indigenous races produced BHÂSH and BHA*N* with linguals, instead of BHÂS and BHAN with dentals, but in that case we should expect BHÂSH to have the same meaning as BHÂS, which it has not. I am not convinced therefore that the concept of shining was raised into that of speaking, and I think we must admit the existence of two roots, one being BHÂ, to shine, the other BHÂ, to speak, each with its varieties; BHÂ, to shine, with BHAN, BHÂS, BHAV, and BHAK; BHÂ, to speak, with BHAN, BHÂSH[2].

Curtius points out that in Greek φαίνω is often applied to the showing forth of speech, as in Soph. Antig. 621, κλεινὸν ἔπος πέφανται. He might have quoted a still stronger instance from Aristotle, Categ. c. 6, ἀπόφασις δέ ἐστιν ἀπόφανσίς τινος ἀπό τινος. But even that would hardly be sufficient evidence to show

[1] Cf. Saussure, Système Primitif des Voyelles, p. 54.

[2] See Edgren, l. c. p. 7.

that to shine by itself was ever conceived as to speak. The nearest analogy is that of KÂS[1], to shine, and KSÂ, pronounced KHYÂ, to tell: all other supposed parallel cases seem to me to break down on closer inspection.

Classification of Sanskrit Roots.

After these preliminary remarks I now give the first attempt at a classification of Sanskrit roots according to their meaning. From what I have said it will be clear that I myself look upon such a classification as purely tentative. I have tried to ascertain what is most likely to have been the original meaning of every root, but having to select one meaning only out of a great variety, the selection has often been a choice between two or even many evils. In a first attempt of this kind the chances of error must be very great, still I hope that those who will carefully examine the results at which I have arrived, will admit that they prove by overwhelming evidence that the meanings of roots are really what we expected them to be, and that they express the primitive social acts of primitive social men, and the states more or less closely related to such acts.

Order of Roots.

The order in which the concepts succeed each other is not very systematic. I have tried, as much as possible, to keep the special acts, such as to dig, the general acts, such as to find, the special states, such as to cough, and the general states, such as to stand, together. But it was impossible to adhere strictly to such a plan, because there are roots which express both acts and states, while in many cases it is difficult to determine whether the special or general meaning pre-

[1] On KÂS see Hübschmann, Indog. Vokalismus, pp. 56, 63.

dominates. The English language lends itself best to an interpretation of Sanskrit roots, because in English as in Sanskrit the same verb may be used with a transitive or intransitive, or, more correctly, with an immediative and causative meaning. To shake means to shake a tree and to be shaking oneself, to stand means to place a thing and to be standing, to boil to make boil or to be boiling. To drop, to burn, to grow, to move, all follow the same rule. Most roots in Sanskrit seem originally to have been capable of this double function, though after a time grammatical distinctions, which we now call active, passive, medial, and causative, were introduced to keep them apart. Sometimes, however, there is no outward distinction at all. Thus we have in Greek ἐλαύνειν, to drive, i. e. to move quickly, and to drive something; φεύγειν, to flee, and φεύγειν τινά, to flee some one; σπεύδειν, to hurry, σπεύδειν τι, to hurry something. There are besides many verbs in Greek which in the present express an act, in the second perfect a state, as ἄγνυμι and ἄγνυμαι, I break, ἔαγα, I am broken; ῥήγνυμι and ῥήγνυμαι, I tear, ἔρρωγα, I am torn. In English we can distinguish to fall and to fell, in German fallen and fällen, trinken and tränken, lernen and lehren. But we can also use I bleed in the sense of I am bleeding and I make bleed, to run in the sense of I run and I run a horse, without any outward change.

THE 121 ORIGINAL CONCEPTS.

1. Dig.
2. Plat, Weave, Sew, Bind.
3. Crush, Pound, Destroy, Waste, Rub, Smoothe.
4. Sharpen.
5. Smear, Colour, Knead, Harden.
6. Scratch.
7. Bite, Eat.
8. Divide, Share, Eat.

9. Cut.
10. Gather, Observe.
11. Stretch, Spread.
12. Mix.
13. Scatter, Strew.
14. Sprinkle, Drip, Wet.
15a. Shake, Tremble, Quiver, Flicker.
15b. Shake mentally, be angry, abashed, fearful, etc.
16. Throw down, Fall.
17. Fall to pieces.
18. Shoot, Throw at.
19. Pierce, Split.
20. Join, Fight, Check.
21. Tear.
22. Break, Smash.
23. Measure.
24. Blow.
25. Kindle.
26. Milk, Yield.
27. Pour, Flow, Rush.
28. Separate, Free, Leave, Lack.
29. Glean.
30. Choose.
31. Cook, Roast, Boil.
32. Clean.
33. Wash.
34. Bend, Bow.
35. Turn, Roll.
36. Press, Fix.
37. Squeeze.
38. Drive, Thrust.
39. Push, Stir, Live.
40. Burst, Gush, Laugh, Beam.
41. Dress.
42. Adorn.
43. Strip, Remove.
44. Steal.
45. Check.
46. Fill, Thrive, Swell, Grow strong.
47. Cross.
48. Sweeten.
49. Shorten.
50. Thin, Suffer.
51. Fat, Stick, Love.
52. Lick.
53. Suck, Nourish.
54. Drink, Swell.
55. Swallow, Sip.
56. Vomit.
57. Chew, Eat.
58. Open, Extend.
59. Reach, Strive, Rule, Have.
60. Conquer, Take by violence, Struggle.
61. Perform, Succeed.
62. Attack, Hurt.
63. Hide, Dive.
64. Cover, Embrace.
65. Bear, Carry.
66. Can, Be strong.
67. Show.
68. Touch.
69. Strike.
70. Ask.
71. Watch, Observe.
72. Lead.
73. Set.
74. Hold, Wield.
75. Give, Yield.
76. Cough.
77. Thirst, Dry.
78. Hunger.
79. Yawn.
80. Spue.
81. Fly.
82. Sleep.
83. Bristle, Dare.
84. Be angry, harsh.
85. Breathe.
86. Speak.
87. See.

88. Hear.
89. Smell, Sniff.
90. Sweat.
91. Seethe, Boil.
92. Dance.
93. Leap.
94. Creep.
95. Stumble.
96. Stick.
97. Burn.
98. Dwell.
99. Stand.
100. Sink, Lie, Fail.
101. Swing.
102. Hang down, Lean.
103. Rise up, Grow.
104. Sit.
105. Toil.
106. Weary, Waste, Slacken
107. Rejoice, Please.
108. Desire, Love.
109. Wake.
110. Fear.
111. Cool, Refresh.
112. Stink.
113. Hate.
114. Know.
115. Think.
116. Shine.
117. Run.
118. Move, Go.
119a. Noise, inarticulate.
119b. Noise, musical.
120. Do.
121. Be.

Further reduction of concepts.

These 121 concepts constitute the stock-in-trade with which I maintain that every thought that has ever passed through the mind of India, so far as it is known to us in its literature, has been expressed. It would have been easy to reduce that number still further, for there are several among them which could be ranged together under more general concepts. But I leave this further reduction to others, being satisfied as a first attempt with having shown how small a number of seeds may produce and has produced the enormous intellectual vegetation that has covered the soil of India from the most distant antiquity to the present day[1].

I shall give a few instances how I think that the varying spheres of meaning of every root might be

[1] For the benefit of Sanskrit scholars I give at the end in an Appendix a list of the actual roots which I have tried to classify under the 121 concepts, or rather from which I have previously extracted those concepts.

determined, first of all, in one language, for instance in Sanskrit, afterwards in all cognate languages of one and the same family. There is a further step to be made, but that will be reserved for the distant future. After the sphere of meaning of a root, such as, for instance, KHAN, to dig, has been determined in the Aryan family, scholars should take a Semitic root, having originally the same meaning, whatever its sound may be, and compare the secondary concepts which the human mind spins out of this root in its Semitic home with the web which it has woven in its Aryan home. If the same process were then carried on to other classes of language, we should in the end gain a complete panorama of the intellectual toils and battles through which the human race has passed, and by which it has become what it is. But such a task cannot be attempted at present, if ever it can be carried out in all its completeness. At present I attempt no more than to show how a few small corners in the small field of Sanskrit may be surveyed, and the ramifications of a few Sanskrit roots be rendered intelligible.

Spheres of Meaning.

The root KHAN means in Sanskrit to dig, and its sphere of meaning may be determined by the following concepts—digging, wounding, destroying, fastening, spade, mouse, hole, well, sky, nought.

The root KHAN.

This may seem a very irregular periphery of thought, and to a certain extent I doubt whether the special act of digging can be considered as the true central point. We saw that in form also the root KHAN is clearly a secondary root, and that its initial KH represents an original SK. A root

SKAN does not indeed exist in Sanskrit, but KSHAN, which may represent it, retains the meaning of wounding and injuring, while *KHÂ* (SKÂ), which may likewise be connected with SKAN, means distinctly to cut[1].

If then we take KHAN, not only in the sense of digging, i. e. cutting open the soil, but also of cutting in general, we can account for the following derivations :—

(1) Words expressive of the Agent : khaná, khânaka (digger, thief, mouse, cf. cuniculus, rabbit, mine, canalis), khani, khanitár, â-khu (mole, mouse, pig, thief).

(2) Words expressive of the Act : khanana, khâti.

(3) Words expressive of the Instrument : khanayitrî (shovel), khanítrâ (spade), khâtra (κέντρον).

(4) Words expressive of the Result : khaná (hole); khâni (mine), khâta (hole, well, κῆτος, gorge, in κητώεις, Zend skata), khâ (well, source), kha (hollow, air, ether, naught).

Words expressive of Place : khaná (a digging).

As a verb, khan, to dig, is used for piercing with arrows, wounding, etc.

With ud, it means to dig up, to destroy.

With ni, to dig in, to hide, to fasten.

With pra, to undermine, to bring down.

In Zend, kan with aipi means to fill ; with vî, to level ; with ham, to rub.

I shall next examine some roots which I have classed together under the head of Platting, Weaving, Sewing, Binding.

It is impossible when we speak of primitive arts,

[1] See before, p. 372.

such as, for instance, platting, spinning, weaving, to say whether we are to take their names in a very rude or in a more advanced sense: "What we now call to weave was originally no more than platting, putting reeds or fibres side by side and tying them in some way or other so that they should hold together. The same word, however, which originally signified the rudest art, was often retained when that art had been brought to a higher state of perfection, just as we speak of a musket when the musket hawk has long been superseded by a gun, or as Flinte is retained in German as the name of a gun, though flints have long disappeared from our armouries. Sometimes the same root means to plat in one language, to weave or to spin or to sow in another. Thus we find νέω and neo used in Greek and Latin in the sense of spinning, while the O.H.G. nâjan means to sow, and Gothic nati means net. In such words as snâyu, tendon, the radical meaning seems to be that of binding, supposing that snâ is a parallel form of nâ, though the expression may also have been metaphorical, the tendons on the bones being like the threads holding together a woof. The modern term Histology means the science of textures in animal tissues.

The root VÂ (vi, u), to plat, to weave.

Thus the sphere of meaning of VÂ comprises platting, weaving, combining, making of plans, poems, and songs; withies, reeds, flax, tissue, and fold in fourfold, etc.

(1) Agent: vâya, vayitar, vemaka, umâ[1] (spinster).

(2) Act: vayana, ûti, vâna, vayuna (wisdom).

[1] Upanishads (Sacred Books of the East, i. p. 151).

(3) Instrument: veman (loom). Material: vetra, vetasa (vitis, ἰτέα, οἶσος, withy), ve*n*u (reed), umâ (flax).

(4) Result: ûta (woven), ûti (tissue), otu (warp), and vaya, fold, in *k*atur-vaya, fourfold.

The root VABH, to weave.

The root VABH does not occur as a verb in Sanskrit, but its former existence is proved by such words as ûr*n*a-vâbhi, wool-weaver, i. e. spider, by the side of ûr*n*a-nâbhi. VÂ and VABH may be called parallel roots, and UmBH, to bind fast together, belongs to the same cluster. The Greek ὑφ-αίνω, the O.H.G. wëban, to weave, represent the same root. The sphere of meaning is weaving, combining, plotting, binding, spider. The connection between spinning and thinking is seen also in Sk. tarku (ἄτρακτος), spindle, and tarkayati, to think, to guess; likewise in ῥάπτω, meaning to spin and to contrive[1].

The root PÆñK.

The root PÆñK, though it has in Sanskrit the more general meaning of mixing, filling, satisfying, seems originally to have been used in the more special sense of platting and joining. It appears with that meaning in Gr. πλέκω for πέρκω, Lat. plec-to, du-plex, Goth. flaht (πλέγμα), O.H.G. flih-tu, and flahs, flax. Parca (like κλωθώ) clearly springs from the same source, possibly also O.H.G. felga, felly (see before, p. 226).

The root KÆnT, to spin.

The next root we have to consider is KÆnT, to spin, leaving out of consideration its possible connection with KÆnT, to cut.

Sphere of meaning: Twisting, platting, spinning, mat, hurdle,—fold.

[1] See Schrader, Handelsgeschichte, p. 175.

Agent: karttar.

Act: kartana; sa-k*rit*, once, like sim-plex.

Result: k*a*ta, mat; cf. crates, κάρταλος, Goth. haurd-s, hurdle.

With pari, to tie around; with ud, to unloose.

The root KṚT, to bind.

The root KṚT may be distantly connected with the preceding, but its own sphere of meaning is binding, bunch, summit.

Agent: *krit*.

Instrument: *k*artana, fibula.

Result: *k*ûdâ (?), bunch of hair, crista.

With ava, nis, vi, to untie, set free; with â, to bind.

Another important root, having the sense of joining, is NAH.

The root NAH (nabh), to tie, to bind.

Sphere of meaning: Binding, adorning, arming, strap, navel, neighbour.

Act: naddhi, binding.

Instrument: nah, girth; naddhrî, a leather strap; nâbhi, A.S. nafela, navel, ὀμφαλός, umbilicus. From it sa-nâbhi, a real brother (ἀ-δελφός), a paternal kinsman, affectionate, like. As to ûrṇa-nâbhi, see VABH, p. 410.

Result: naddha, bound, adorned, armed; nahus, neighbour.

Our next root is GRAnTH, to tie.

The root GRAnTH, to tie, to join.

Sphere of meaning: Tying, joining, composing, hard, knot, trick, fraud, book.

Act: grathana.

Result: grathita, joined, adorned, hard; grathna, bundle; granthi, knot, joint, doubt, fraud; grathin, tricky; grantha, line, book.

With ud, to loosen; with upa, to surround.

Another very important and wide-spreading root is SÎV, to sew.

The root SÎV (syû), to sew. Sphere of meaning: Sewing, joining, needle, thread, seam, edge.

Agent: sîvaka.

Act: sîvana, syûti, sevana.

Instrument: syû (thread, needle), syûman (strap, rein, lock-string, ὑμήν), sûtra, string.

Result: syûta, syûna (sack), syûma (ray), sûnâ (basket).

Cf. Lat. suo, Gk. κασ-σύω, Goth. siujan, O.H.G. soum (seam), siuwan, to sow.

The root SI, to bind. The root SI, which in certain verbal forms coincides with the root SÂ (so), to settle, is nevertheless in its nominal derivatives easily distinguishable by the prevalence of its palatal vowel. Its sphere of meaning is tying, bridge, snare, net. We have setra, fetter, setu, fetter and bridge, prasiti, snare, net, and we see the vowel i likewise in Greek derivatives, such as *ἰ-μάς*, strap, *ἰ-μάσθλη*, whip; in O.H.G. seil, rope, etc.

The root SÂ, to settle, both active and neuter, meaning to hold down and to go down, is best known in composition with prepositions. Thus with abhi, it means to hold down, to destroy; with ava, to take off, to cease, to settle, to dwell, to settle on something, to determine, avasâya, meaning rest, determination, avasâna, end, death, anuvyavasâya, right concept. With adhyava it means to settle, to finish, to dare, to desire. Sâyam, evening, West, may come from the same root, in the sense of setting or going down.

The roots DÆRBH and DÆRmH, to tie into a bunch. The sphere of meaning of DÆRBH and DÆRmH, two varieties of one and the same root, is binding together, fastening, bunch, strong, rope, long, very, hoping, composing.

(1) Act: d*ri*bdhi, binding together.

Result: darbha, bunch of grass, grass; darbha-ra*gg*u, rope of grass.

With the preposition pi, to cling to, to hope; with sam, to join, to compose.

(2) Act: d*rim*hana.

Agent: d*ri*h (dh*ri*k).

Result: d*ridh*a, strong, stronghold, iron; d*ri-dh*am, very.

With anu, to prolong, cf. dîrgha, long, δόλιχος.

The root DÂ, to bind.

Instrument: dâman, fetter.

Cf. δέω, δίδημι, to bind, δεσμός, fetter, διάδημα, diadem.

The root BAnDH, to bind.

Sphere of meaning: Binding, pledging, relation, deafness.

Agent: bandhaka.

Act: bandhana.

Instrument: bandhaka, pledge.

Result: bandhu, relation; badhira, deaf.

The root PA*S*, to bind.

The root PA*S* is not used as a simple verb in Sanskrit, but we have it as a denominative verb in pâsayati, to bind, and in nominal derivatives, such as:

Instrument: pâ*s*a, fetter.

Result: pasu, what is caught and tethered, i. e. cattle, pecus; Goth. faihu. In other Aryan languages this root has been very prolific. We find it in Latin păc-iscor, pactus sum, I bind or pledge myself, in pâx, peace, pâcare, to quiet; in Goth. fahan, to catch. There is a parallel form with final media in πήγ-νυμι, to fasten, πάγη, snare, compages, fetter, pignus, pledge, and another with nasalisation in pango, to fix, German fangen, to catch.

To give an idea of the wonderful variety of thought that may find expression through one such simple root as PAS, to fasten, to bind, I shall give a list, not of all, for that would be impossible within the limits of a chapter, but of the more important words in Greek, Latin, and German which can be traced back to this one single root.

In Greek, the verb πήγνυμι, πήξω, means I fasten.

πέπηγα, I stand fast.

πηκτός, stuck in, well put together, compacted, solid, congealed, curdled, frozen.

πηκτή, a net or cage to catch birds.

πηκτίς, a harp or pipe, joined of several reeds.

πάκτων, a boat, easily put together and taken to pieces.

πακτόω, to fasten.

πῆγμα, framework, scaffold, anything congealed, rennet.

πῆξις, fixing, freezing.

πηγός, well put together, solid, strong.

πηγεσίμαλλος, thick-fleeced.

πηγάς, rime, earth hardened after rain.

πηγετός, πάγετός, frost, rime.

πάχνη, hoar-frost, rime.

πάγος, a mound, hill (Areopagus), frost, scum on the surface of milk, salt.

πάγη, snare, noose, trap.

πάγιος, firm.

παχύς (pinguis), thick, stout, dull, stupid, παχύδερμος, thick-skinned.

πάσσαλος, peg, πασσαλεύω, to hang on a peg.

ἅπαξ, once.

In Latin we have, (1) With final tenuis:

paciscor, pactus sum, pacisci, to agree upon.

pactum and pactio, a compact, agreement.

pâx, a treaty, peace.

pâcare, to pacify (payer, to pay).

pâcificus, pacific.

(2) With final media:

pagere, in xii. tables, to settle by law.

compâges, a joining together, structure.

propâges and propâgo, a layer, offspring, descendant.

propâgo, to peg down, to propagate, to extend, to prolong.

pâgina, a page, compâginare, to join.

pignus, pledge.

pâlus (paglus), stake.

pâgus, settlement (paganus, a pagan).

(3) With final media and nasal:

pango, pepigi, to fasten, to set, to compose, to write.

compingo, to join, to compose.

impingo, to bind, to drive into, to urge; impactio, impact.

suppingo, to fasten underneath.

In German, too, we have two bases, one corresponding to pac, namely fahen, the other to pang, namely fangen.

(1) Fahen is the Gothic fahan, faifah, O.H.G. fâhan, and in the preterite fie and fiang, with nasal, part. gifangan. It means to catch, to take, to take root, etc.

Fähig, capax, clever, capable.

Fähigkeit, facultas.

Fach, snare (πάγη, pâsa); partition, wall; space between walls, space, time; business, occupation (as in Fachmann), fold.

-fach, as in vielfach, manifold.

(2) Fangen, to catch, to take, to take root, etc.

Gefangen, caught, imprisoned, Gefängniss, prison.
Empfangen, to receive, to conceive.
Finger, digitus.

However large the number of these derivatives, and however various their significations, they give no idea as yet of the real wealth that has been got out of this one small mine. All words which we have examined are words of broad and definite meaning, and we have hardly said anything of the finer shades of thought and feeling which language has to express.

Empfangen in German means to receive, no longer to catch. But ein empfängliches Herz is not only a receptive, but a responsive or sympathising heart.

Verfangen means to catch. But if we say, Dies verfängt nicht, we mean this does not tell, it does not touch the main point. Eine verfängliche Frage is a perplexing question, eine unverfängliche Bemerkung, an innocent remark. A shy girl is called befangen, a wild girl a Wildfang. Umfangen is to embrace, Umfang, the extent, umfänglich, lengthy. Anfangen is to begin, anfänglich means at first. Unterfangen is to undertake, but it generally implies to undertake something that is too difficult. If we went through all these derivatives, and added to them all their possible compounds, we might put together a small dictionary that would supply the materials for a not inconsiderable conversation.

Of course it might be said that the Sanskrit language, from which alone the roots and their concepts are taken, is only one of the Aryan languages; but I make bold to say that there are few concepts

in English or Latin or Greek that could not be expressed with the words derived from Sanskrit roots.

I believe, on the contrary, that the number of roots necessary to account for the whole wealth of the English Dictionary, which is said to amount to 250,000 words, is smaller than that of Pâṇini's roots, even after they have been reduced to their proper limits. Roots, which in Sanskrit left one or two words behind, have often, after the loss of their small progeny, become totally extinct, while in modern languages one single root has often, by the formation of primary, secondary, and tertiary derivatives, and by the elaboration of new meanings, increased the number of its descendants to an enormous extent. One feels almost tempted to compare the fertility of the human mind in the production of words with the fertility of nature in the production of plants and animals. Here as there the same simplicity of the elements, the same unbounded variety of form, and the same carelessness as to the survival of any but the fittest. The English Dictionary comprehends the survivals of many languages and many dialects, but of the millions of words that have become extinct there is no record, except here and there in a few classical texts and ancient inscriptions. 'The living are few, the dead are many.'

There is no sentence in English of which every word cannot be traced back to the 800 roots, and every thought to the 121 fundamental concepts which remained after a careful sifting of the materials supplied to us by Pâṇini. If I say every word and every thought, this must, of course, be accepted cum grano salis. There are words in English, as there

are in Sanskrit, of which we do not know the etymology, and shall probably never know it. But they constitute a small remnant, which for our purposes may be ignored as compared with the immense majority of words that has been accounted for.

Idées mères.

I know of few things which are at the same time so humbling and so elevating as the small number of concepts out of which all our thoughts and our words have been elaborated. All that we admire, all on which we pride ourselves, our thoughts, whether poetical, philosophical or religious, our whole literature, our whole intellectual life, is built up with about 121 bricks. If they are given us, we can erect a temple which rests on the earth and touches the sky, nay, which encircles even what is beneath the earth and above the sky; for, wonderful to say, we can name, not only what we see and hear and handle, but even what eye has not seen nor ear heard. I do not in all this forget the architects, the poets, the prophets, and philosophers; but what would architects be without stones and bricks? The Science of Language startled the world some years ago with the announcement that it could reduce the 250,000 words, now filling an English Dictionary, to about 1,000 roots. The Science of Thought goes beyond this, and assures us that every thought that ever crossed the mind of man can be traced back to about 121 simple concepts[1]. I may seem to some

[1] In some excellent articles contributed to the Bibliotheca Sacra by the Rev. George F. Wright (1876, Oct., p. 690), it is said with great truth: 'How the vast number of complicated concepts which man employs could have been packed away for use in the simple sounds to which he gives utterance, surpasses our com-

of my readers to use exaggerated language, but the only exaggeration I am really guilty of is my taking for granted that what has been proved of Sanskrit, can be proved of any other Aryan language also. Whether that is so or not, I gladly leave to be settled by future scholars. But even if at present we have proved no more than that the myriads of thoughts that swarmed through the hive of the Indian intellect are all the offspring of not more than a hundred and twenty mother-ideas, a step in advance has been made by the Science of Thought such as few philosophers have ever dreamt of.

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prehension. The creative power of mind which has given origin to the material machinery of the nineteenth century must take a very humble place beside that of the men who first put thought and words together. The former harnessed heat and electricity; the latter made available the true Promethean fire.'

CHAPTER VIII.

FORMATION OF WORDS.

Radical Period.

I HAVE sometimes spoken of roots and their formation as representing a complete period in the history of the human mind. In a certain sense this may be true, but in a very restricted sense only. Growth does not submit to hard and fast lines, and we have no right therefore to suppose or to assert that all the roots of a language were elaborated before another step was made in advance. Many roots show by their form, and still more by the concepts which they embody, that they belong to what we should call secondary stages of thought, and though we can perfectly understand that all the purposes of language could be realised with roots only—this is the case to the present day with Chinese—we have no right to imagine that, until every single root had been finally settled, no progress was made in the synthesis of roots, i. e. in the formation of words.

When I speak of roots I do not simply mean a phonetic element which has been discovered as shared by a number of words in common. That would be to a certain extent Pâṇini's view of a root. But though it would explain the process by which, under proper precautions, a root may be discovered, the result of that process might be something purely abstract and unreal. I mean by root something real,

something that was actually used in conversation, though I willingly grant to the logician that a root, as soon as it forms part of a sentence, should be distinguished by a new name and be called a word.

Now the shortest sentence of all is, no doubt, the imperative, and it is in the imperative that almost to the present day roots retain their simplest form. If KHAN is the root, khana is the imperative, meaning Dig! If DÂ is the root, dâ, give! might have been the imperative. DÂ, however, and similar roots take dhi or hi as a suffix of the imperative in Sanskrit. Thus AD, to eat, becomes ad-dhi (ad-hi), eat thou! Whether this hi or dhi was originally a pronominal element, indicating the second person, or whether it was purely exhortative, is a question which I gladly leave to those who have better ears than I have. Anyhow this form was old, and appears almost identical in Sanskrit and Greek, as in

Imperative.

sru-dhí = κλῦθι.
i-hí = ἴθι.
pi-pri-hi = (ἐμ)πίπλημθι[1].

To us there seems a great difference between the imperative and the indicative. Yet the fact remains that in Greek the second person plural and dual in the active and passive, indicative and imperative, are identical, φέρετον, φέρετε, φέρεσθε, φέρεσθον. In Sanskrit, on the contrary, several forms of the imperative coincide with the imperfect, if we drop the augment, which in the earliest Sanskrit is frequently absent, and always so after the prohibitive, that is, the negatively imperative, particle mâ; namely, 1, 2, 3 pers.

[1] Curtius, Verbum, vol. ii. p. 46.

dual, 1, 2 pers. plur. Parasm., 2, 3 pers. dual, 2 pers. plur. Âtmanep.; and in the Second Conjugation, 2, 3 pers. dual, 2 pers. plur. Parasm., 2, 3 pers. dual, 2 pers. plur. Âtmanep.

This similarity in form between the imperative and the indicative present in Greek may be explained by a similarity in intention, and we must remember that even in modern languages we can say 'you go' instead of 'go,' or in German 'du gehst jetzt gleich' instead of 'geh jetzt gleich.' In Sanskrit, however, the similarity between certain forms of the imperative and the imperfect is apparent only, because, by a reference to Vedic Sanskrit, what seem to be forms of the imperfect without the augment, turn out to be really Let or subjunctive forms.

If we accepted Aristotle's definition that every enunciation (ἀπόφανσις) declares what is either true or false (De Interp. c. 4), the imperative could hardly claim that name, as little as what Aristotle mentions, the prayer (εὐχή). From a higher point of view, however, the imperative also may be called a sentence, for it makes the hearer understand something which the speaker wishes him to know. Nor is it difficult to imagine a transition from an imperative to an indicative sentence. Suppose a threatening command had been conveyed to a gang of lazy slaves—'Dig!' would not a blubbering utterance of the same word have been the natural response, deprecating by its frequent repetition the punishment that was impending on their backs[1]? Nay, even the most primitive form of a conditional

[1] See Pân. iii, 4, 2, lunihi lunihity evam lunâti.

sentence would soon spring from these early monosyllabic conversations. A master requiring his slaves to labour and promising them their food in the evening, would have no more to say than 'Dig—Feed,' and this would be quite as intelligible as 'Dig, and you shall have food,' or, as we now say, 'If you dig, you shall have food.'

But we are anticipating what belongs to later phases of human speech.

Next to the imperative, what is now called the Vocative, a kind of nominal imperative, belongs likewise to the earliest attempts of language. As little as the imperative presupposes a scheme of conjugation, does the vocative presuppose a complete system of declension. It is possible to imagine a vocative even before the formation of a real noun. As soon as the root YUDH, to fight, is used in the sense of fighter, it has passed, even though it undergoes no outward change, through a complete process of predication. This process, which we may represent by 'Fight-here' or 'Fighting-he,' gives us a concept and a noun. YUDH has then really become what is called a general term, applicable to many. But in an early phase of thought, even roots may have been used as what we should call proper names, or nick-names, and these singular terms would hardly require that previous process of predication which produced such words as digger, fighter, striker. Proper names, in a primitive state of society, seem often to be mere imperatives, such as 'Fear-not,' 'Trust-God,' etc. Here then imperative and vocative would run very close together. 'Strike' might be an imperative, and at the same time, though possibly with a change of intonation, a vocative also, just as

Vocative.

now the people who follow a boat-race shout 'Stroke,' the name of the first rower, but mean at the same time, though they do not say so, 'Strike out.'

The Categories.

All this, however, forms the prelude to language only. Real language begins, as Aristotle knew perfectly well, with the sentence, with predication or *κατηγορία*. The word *κατηγορία*, and the different forms of it, the famous Categories, have been exposed to many misunderstandings, but their true meaning is neither more nor less than what its name implies, namely predication. This is the sense in which Aristotle first used the word, and it is the sense in which for the present I mean to use it.

Aristotle speaks generally of ten categories (Cat. iv. 1), namely:—

(1) Οὐσία, Substantia, Substantive, e. g. horse.

(2) Ποσόν, Quantum, Adjective, quantitative, e. g. two cubits long.

(3) Ποιόν, Quale, Adjective, qualitative, e. g. white.

(4) Πρός τι, Ad aliquid, Adjective, relative, e. g. double.

(5) Ποῦ, Ubi, Adverb, local, e. g. in the market.

(6) Ποτέ, Quando, Adverb, temporal, e. g. yesterday.

(7) Κεῖσθαι, Situm esse, Verb, intransitive, e. g. to stand.

(8) Ἔχειν, (se) Habere, Verb, intransitive, e. g. to be thus or thus.

(9) Ποιεῖν, Agere, Verb, active transit., e. g. to cut.

(10) Πάσχειν, Pati, Verb, passive, e. g. to be cut.

Aristotle evidently asked himself, What do we predicate when we form an enunciation? and he naturally took his answer from the Greek language,

such as it was spoken in his days. But it is a mistake to imagine that he borrowed the categories from Greek grammars. Grammars and grammatical science hardly existed in his time, certainly not as an independent branch of knowledge. On the contrary, when grammar became separated from logic, grammarians borrowed Aristotle's logical terms, and used them for their own purposes. It is right, therefore, to say that Aristotle borrowed his categories from the Greek language, it is wrong to say that he borrowed them from Greek grammar.

After this, everything will be easy and intelligible. In grammar the categories came to be used as the names of what we now call the ten parts of speech, and in that form the framework which had been borrowed from language was handed back, as it were, to the students of language.

At a later time, when philosophers looked for the highest genera of things, these categories proved again extremely useful, because it was found that the most general praedicamenta corresponded, as was natural, to the highest genera that could be predicated. Aristotle himself takes the categories as *σχήματα τῆς κατηγορίας*, but also as *γένη τοῦ ὄντος* or *τῶν ὄντων*[1].

Lastly, when the question was asked how we came to predicate at all, these categories, though slightly modified by successive philosophers, came in again as the fundamental concepts of the mind, the Stammbegriffe des Verstandes, the nature of which, whether as the result of repeated experience and generalisation, or as the antecedent sine quâ

[1] T. H. Green, Works, vol. ii. p. 208.

non of all experience, still continues to be one of the most important subjects of philosophical controversy.

Almost every philosopher has amused himself in pointing out flaws or redundancies in Aristotle's table of categories, yet that table is a very wonderful achievement, if only rightly interpreted. Aristotle, speaking and thinking the Greek language, asked himself under how many different heads the words which he himself used in predication could be classified, or how many kinds of predication were to be found in that language which represented to him all languages, namely Greek.

As every sentence consisted of a subject and a predicate, all words might be divided into those which expressed substances, and those which expressed attributes. The first category was therefore that of substance, the predication of οὐσία, which gives us τὰ ὄντα, things. We must remember that we do not predicate τὸ ὄν, that which is, but that we predicate οὐσία, substance, and thus create τὸ ὄν. This is a distinction that has often been overlooked.

The first category is fundamental and stands by itself. All other categories predicate attributes or accidents, and they always presuppose the first category of οὐσία, because attributes can be predicated only after the category of οὐσία has been applied to something which may become the subject of further predication. Grammatically this distinction often seems to vanish, because adjectives may almost always, without any change of form, be used as substantives, and substantives as adjectives. We may use adjectives as substantives, as when we say Sapientes dicunt, 'Sages say;' but here homines, men, is under-

First Category, Substance.

stood. We may use substantives as predicates, as when we say 'Bucephalus is a horse,' but in that case horse does not predicate substance, *οὐσία*, but quality, *ποιόν*. It is, in fact, an adjective in disguise. It means that Bucephalus has all the attributes of a horse, or belongs to the class of things signified by the name of horse. Equus is used instead of equinus. But when I say hic equus est albus, equus, horse, could not be replaced by equinus. Equus here predicates *οὐσία*, substance, it refers to an *ὄν*, a thing; it is a true substantive, the name of something substantial.

While then the first category predicates *οὐσία* or substance of something which thus becomes an *ὄν*, a thing, all the other categories are meant to predicate something of the *ὄν*. If we say that 'the horse is six feet high,' or better, if we say, 'the horses are five in number,' we predicate a *ποσόν*, or quantum. If we say the horse is strong, we predicate a *ποιόν* or quale. If we say the horse is stronger than the mule, we predicate a *πρός τι*, an ad aliquid, a relation. Categories ii–iv.

These three categories which differ essentially from the first, in so far as they predicate something of something, while the first category names something of which attributes can be predicated, differ but slightly among themselves. The quantum differs from the quale, because it simply counts, while the quale defines or qualifies, and the ad aliquid may be explained as qualifying with reference to something else, not only when we actually use a comparative, but also when we speak, for instance, of the master, i.e. of a servant, or of a servant, i.e. of a master.

Categories of Space and Time.

The next two categories refer to space and time. They have been called adverbial, but it would be equally correct to describe them as declensional, for they are generally conveyed by the cases of nouns, excepting the nominative and vocative, both of which have really no right to be called cases or πτώσεις in the philosophical meaning of that word [1].

The verbal Categories.

The last four categories are realised in the verb. If we take the ninth category first, we see that it is expressed by active transitive verbs, such as 'I dig the ground,' 'I cut the wood.' The tenth is the passive, and of course, intransitive verb, 'I am struck,' 'I am loved.' The seventh category is active, but intransitive, such as 'I move,' 'I walk,' 'I shake,' 'I fear,' 'I stand,' where the action remains in the agent, without necessarily going out towards something else, that is, where the verb is intransitive.

The most difficult category of all is the eighth. It likewise comprises intransitive verbs, but verbs which express, not an act, but a passive status or habitus, what Aristotle expresses by ἔχειν or ἕξις, as in κακῶς ἔχειν, Old Germ. ubil haban, and illustrates by ὑποδέδεται and ὥπλισται, i. e. 'he is shod,' 'he is armed.'

Other interpreters, however, take ἔχειν not in the sense of se habere (sich verhalten), but of habere, though they do not explain how Aristotle could have illustrated that category by ὑποδέδεται

[1] If Sanskrit grammarians exclude not only nominative and vocative, but the genitive also from the name Kâraka, this is because they think of it chiefly as predicative or as γενική.

and ὥπλισται. Augustin [1], for instance, gives eight kinds of habere, all with the sense of having or possessing, such as, to have something in the mind, like justice; to have something in the body, like whiteness; to have length; to have a ring on the finger; a dress on the body; to have arms and feet; to contain wine as a cask; to possess something like a house. But all this would originally be expressed by active transitive verbs, such as to possess, to hold, to contain, and would not require the admission of a separate category. This shows at how early a time Aristotle's philosophy began to be completely misunderstood.

That these categories were gathered from the Greek language, and that Aristotle, if he had been a Jew or Chinaman, might have collected a different set of categories, may be readily admitted. Still whatever language we have to deal with, we shall always find in it one category to express subjects, others to express the predicates of such subjects, the quantum, quale, and ad aliquid, these being in space, and the situm esse, habere, agere, and pati, all of which involve a being or continuing in time. We need not have definite grammatical forms to distinguish nouns, adjectives, verbs, adverbs, and particles, but there must be the categories which we express by these grammatical formations.

We saw before that a substantive, for instance, could stand for an adjective, as in hic est equus, and we might say that an adjective may take the place of a verb, as in equus est canus, which is much the same as equus canet. Language might dispense

[1] Categoriae (ed. Lugdun. 1563), vol. i. p. 421.

with adjectives altogether. But in spite of these uncertainties, the table of ten categories was found to supply a convenient frame for grammarians who filled it with the Partes Orationis, assigning Substantives to the first category (οὐσία), to which, properly speaking, pronouns also belong; adjectives to the second, third, and fourth categories, ποιόν, ποσόν, πρός τι; adverbs and prepositions, which may be called transitive adverbs, to the fourth and fifth categories, ποῦ and πότε; and the four remaining categories to the verb. Conjunctions might be classed under adverbs determining the relation, not of single words, but of whole members of a sentence, while most of the cases too might find a place under that heading.

Objections to Aristotle's Categories.

If we examine the objections which have been made to Aristotle's categories, we shall generally find that they arise from a misunderstanding of Aristotle's real purpose. All he cared for was that nothing that is ever predicated in any sentence should be without a place in his system. Mill in his Logic says that there is no place for the feelings. This is a mistake. If feelings are predicated, they can only be predicated, either as states of feeling, and they would then fall under the eighth category of ἔχειν, se habere, as, for instance, 'he feels tired,' 'he feels hopeful;' or, if they are active transitive feelings, they would belong to the ninth category of ποιεῖν, such as 'he desires food,' 'he watches the serpent;' while, if they are conceived as sufferings, they might be claimed by the tenth category of πάσχειν, as 'he has been terrified.'

Again, if Mill remarks that by the side of the

category of κεῖσθαι or situm esse, that of ποῦ or ubi is redundant, he confounds two things. The category of κεῖσθαι is meant for the predication of a status, that of ποῦ, ubi, for the predication of the place, as ποτέ is for the predication of the time, in which that status, or act, or suffering happens to be. Kant has rightly separated the fifth and sixth categories, as forms of sensuous intuition.

Let any one try to analyse any sentence which he may meet with, and he will be surprised to find that no predicamentum which occurs in it is without a place in the table of predicamenta drawn up by Aristotle. We might, no doubt, bring the categories of quantum, quale, and ad aliquid under the more general category of quality, those of ubi and quando under that of situation in time or space, but we should not gain much by this, and for practical purposes these subdivisions have certainly proved most useful.

Whether the categories which Kant calls the categories of modality might claim a place in Aristotle's table, is a question that has often been discussed. In grammar they are expressed by the indicative, the subjunctive, and the optative, and by certain gerunds[1]. It seems better, however, to treat these as syncategorematic rather than as categorematic, and they can often be dissolved into a sentence on which the chief sentence depends. 'All men may be good' is much the same as 'I believe that all men are good.'

But these categories which proved of so much utility to the early grammarians, have a still higher

[1] See Reisig, Vorlesungen über Lateinische Sprachwissenschaft, § 10.

interest to the students of the science of language and thought. Whereas Aristotle accepted them simply as the given forms of predication in Greek, after that language had become possessed of the whole wealth of its words, we shall have to look upon them as representing the various processes by which those Greek words, and all our own words and thoughts too, first assumed a settled form. While Aristotle took all his words and sentences as given, and simply analysed them in order to discover how many kinds of predication they contained, we ask how we ever came into possession of such words as horse, white, many, greater, here, now, I stand, I fear, I cut, I am cut. Anybody who is in possession of such words can easily predicate, but we shall now have to show that every word by itself was from the first a predication, and that it formed a complete sentence by itself. To us, therefore, the real question is, how these primitive sentences, which afterwards dwindled away into mere words, came into existence. The true categories, in fact, are not those which are taught by grammar, but those which produced grammar, and it is these categories which we now proceed to examine.

Categories as determining the Growth of Words.

If the Science of Language had taught us nothing else except that all terms, whether singular or general, concrete or abstract, denotative or connotative, collective or partitive, positive or negative, relative or absolute, univocal or aequivocal, and whatever other divisions may have been devised by logicians, have all been formed from roots as the embodiments of concepts, I doubt whether it could have conferred a

Words formed by applying the Categories to the Roots.

greater boon on the study of philosophy in general. The whole history of philosophy has been called a struggle over the origin and the true nature of concepts and abstract terms, and the question how from the singular and concrete the human mind could possibly have arrived at the general and the abstract still forms the chief battle-field of modern philosophy. The Science of Language has proved by irrefragable evidence that human thought, in the true sense of that word, that is, human language, did not proceed from the concrete to the abstract, but from the abstract to the concrete. Roots, the elements out of which all language has been constructed, are abstract, never concrete, and it is by predicating these abstract concepts of this or that, by localising them here or there, in fact, by applying the category of *οὐσία* or substance to the roots, that the first foundations of our language and our thought were laid.

On this point there ought to be no doubt or wavering. We deal here with facts, and facts only. We may explain them as we like, but no one is able to deny them. Though the subject has been alluded to several times before, a few more illustrations may here be useful. Illustrations.

Why was a goose called goose? As to the history of the word, we trace goose or A.S. gós back to gans, German Gans, to Latin 'anser for ganser, and lastly to Sk. ha*m*sa. The root from which ha*m*sa is derived must be GHÂ or GHAN, to open the mouth, to gape, in Greek *χαίνω*, from which also *χάος*, *χάσμα*, etc. The Greek *χήν*, *χηνός* comes from the same root, and the goose therefore as well as the gander was originally conceived Goose.

as the gaping or hissing bird, whether applied to the wild or the tame bird.

Wolf.

The wolf was called *vṛika*, from a root VÆRK (Sk. *vrask*), to tear, to lacerate, and the same word appears in Greek as *Fλύκος*, in Latin as lupus for vlupus, in Gothic as vulf-s[1].

Pig.

The pig was called sus, *ὗς*, O.H.G. sû, Gothic svein, all from a root SŬ, to bring forth, to breed, the sow being probably considered as the most prolific of domestic animals. This name should not be confounded with what seems to be a purely mimetic baby-name, namely sû-kara or su-kara, i. e. the sû-maker, the grunter, which exists in Sanskrit, but in Sanskrit only.

Man.

Man was called homo, probably the earth-born, from the same source as *χαμαί* and humus. Here we have to presuppose the concept of earth, derived from some unknown general concept, and from this substantival concept of earth, homo, Goth. guma, *ἐπιχθόνιος*, was formed. Man is also called in Sk. marta, mortalis, the mortal, from MÆR, to decay, or, as distinguished from other animals, manu, the thinker, from MAN, to remain, to retain[2].

Birds.

Birds were called vi, plur. vayas, Lat. avis, Greek *οἰ* in *οἰωνός*, probably from a root VÎ, and VÂ, which also yielded names for wind in Sanskrit and Zend, vâyu and vayu[3]. This name therefore marked birds simply as flying creatures. As other distinguishing qualities of birds

[1] De Saussure, p. 99; Snow, Transactions of the Oxford Philological Society, 1884–1885, p. 18.

[2] See M. M., 'Biographies of Words,' ii. p. 243.

[3] See Justi, Handbuch, s. v. vi. Pictet's statement that vî in Zend means fish, is unfounded.

cámĕ to be observed, they were called in Sk. pakshin, possessed of wings, from paksha, wing, and this Benfey compares with Gothic fugl, fowl. We have besides in Sanskrit such names as patrin, feathered, from patatra-m, feather; anda-ga-s, egg-born or oviparous; dvi-ga, twice-born, first as egg, then as bird; kha-ga, sky-goer, etc. Most of these, however, are of late and poetical origin, and therefore not to be found in any of the other Aryan languages. In Greek we find besides οἰωνός, ὄρνις, ὄρνιθος, supposed to come from a root ṚI, to rise; πτηνόν, the flying animal, etc. In Latin we find volucris, flying, ales, alitis, winged, etc.

Fish.

It is curious that there is no common name for fish in the Aryan languages, and neither Sk. matsya, nor Greek ἰχθύς, nor Latin piscis clearly reveals its original predicative power.

Worms.

Worms are called krimi in Sanskrit, kirmi-s in Lithuanian, cruim in Irish, all derived from the root KRAM, to walk or roam about. In Gothic, vaúrm-s is the regular representative, while in Latin, vermis, and in Greek ἕλμις show e, which has induced some scholars to refer them to the root VAL, to twist[1].

There are of course many words which cannot, or at all events, which have not yet been analysed etymologically, and the conceptual meaning of which remains therefore for the present doubtful. But the fact that all nouns had a predicative meaning is established on such abundant evidence that no doubt is possible as to the general principle that all nouns presuppose concepts, that these concepts are em-

[1] Curtius, p. 552; De Saussure, p. 18.

bodied in roots, and that therefore all words, derived from roots, are from the very beginning abstract, not concrete, terms.

Naming impossible without radical concept.

And if we reflect for a moment, we shall see that it could hardly have been otherwise. For how should, for instance, an oak have been named? It does not utter a sound that could be imitated. It does not evoke an expression of awe that could be fixed upon as its name. The only way to name it, is to know it; and what is to know, except to bring something under some general concept, such as what is cut down, what is burnt, what is decorticated, or what gives shelter or food. This was done, for instance, in the Greek name for oak, φηγός, derived from a root φαγ, in Sanskrit BHAG, meaning originally to divide, then to eat. The oak was conceived and named as the food-tree, supplying food both for man and for cattle. In Latin fagus became the name of another food-tree, the beech, the German die Buche, and as the old material used for writing in Germany consisted of small staves or tablets of beech-wood, our modern word book, das Buch, is indirectly, yet by an unbroken succession, derived from the concept of dividing and eating.

Oak.

Horse.

A horse, no doubt, might have been indicated by some sound imitating the neighing of the animal. But in equus, Sanskrit asva, Old Saxon ehu, we can discover nothing like the sound of neighing, or tramping, or kicking, but we arrive by a careful analysis at the root AS, expressive of the concept of sharpness and quickness, from which we have likewise the name for mental quickness and sharpness, such as acies and acutus. The concept

of cutting, sharpening, being sharp and quick had therefore to be elaborated first, before the conceptual, as distinct from the intuitional, knowledge of the horse could have been elaborated. That name, the quick, might no doubt have been applied to many other animals, but having been repeatedly applied to one kind, it became unfit for other purposes, and survived in the struggle for existence as the fittest name of the horse.

Serpents.

Serpents also are quick enough when they fall on their prey, but while they shared this character with other animals, what seemed to distinguish them and at the same time to render them most formidable, was their power of throttling or squeezing. They were therefore called ahi in Sanskrit, ἔχις in Greek, anguis in Latin, all from a root AH or AMH, to squeeze, or sarpa, serpens, from a root SṚP, to creep, to go.

Are there Savages without abstract terms?

If therefore Darwin and other ethnologists tell us that there are savages who have not a single abstract term in their language, they ought first of all to give us the names of the savages to whose languages they refer[1], and secondly they ought to explain how these savages could possibly have formed the simplest names, such as father, mother, brother, sister, hand and foot, etc., without previously possessing abstract concepts from which such names could be derived. There may be languages, nay, there are most highly cultivated languages, such as Chinese, for instance, without separate words for whiteness by the side of white, for goodness by

[1] A writer in the Buenos Aires Standard, Sept. 11, 1886, states that he has collected a dictionary of 32,430 words of the Yahgan language, Darwin's lowest of the low.

the side of good, but the first abstraction takes place in the formation of such words as white or good, while whiteness and goodness are really abstract words of the second degree [1].

Apparent exceptions.

There are of course exceptions, but they are so clearly exceptions as hardly to deserve separate notice. Singular terms, such as Mausoleum and Academy, are not derived from conceptual roots, but from Mausolus and Academus, just as a Hansom is derived from Mr. Hansom, and Mackintosh from Messrs. Mackintosh and Co. In some cases such singular terms can be changed into general terms by the addition of the indefinite article or by being used in the plural. But even proper names, such as Sokrates, for instance, presuppose the previous existence of two such concepts as sos, sane, and kratos, strength, and the first Sokrates was called by this name in order to indicate his sound strength. We may also change a proper name, like Sokrates, into an appellative, a Sokrates, into a verb, 'to Sokratise,' and into an adjective, Sokratic.

Again, admitting cock, for argument's sake, to be a mimetic word,—though this has by no means been proved,—we could derive from it coquet, strutting like a cock, coquetterie, coquelicot, a cock's comb, and a wild red poppy [2], etc. But all this lies outside our problem. These words express late excrescences, not the early and natural growth of

[1] If Milligan in his 'Vocabulary of the Dialects of some of the Aboriginal Tribes of Tasmania,' p. 34, maintains that 'they could not express the abstract qualities, such as hard, soft, warm, cold, long, short, round,' he probably means abstracts of the second degree, such as hardness, softness, but not hard and soft. See Sayce, Introduction to the Science of Language, ii. p. 6.

[2] Lectures on the Science of Language, i. p. 411.

language, and they are possible only after the general framework of language has been finished, or after the broad furrows of thought have been drawn, just as when music has once been fully elaborated, and brought to its highest perfection in a symphony, it is possible for a Beethoven, as for instance in his Pastoral Symphony, to introduce, by a kind of false analogy, the actual notes of certain birds, without thereby committing himself to the theory that all music was in the beginning an imitation of the notes of birds.

Every root embodies a concept, because it embodies the consciousness of our own repeated acts. When we ourselves strike, strike, strike, we have the consciousness of striking, and when we accompany these strokes with the sound of Thud or Tud or Tap, we have in these sounds the natural embodiment of that consciousness. It does not matter whether we call the concepts, expressed by roots, general or abstract, because every concept must be both general and abstract; general, because it always applies to repeated acts; abstract, because much that is peculiar to each individual act of striking has been merged in the concept of striking. It is important also to observe that these self-willed acts are not the object of sensuous observation only, but of immediate knowledge or consciousness.

Original predication.

While, as we saw, the imperative use of a root can hardly be called language as yet, true language begins as soon as we predicate, that is to say, as soon as we use our categories. We use our categories, we predicate, we form propositions not only when we say 'a man is mortal,' but when we say for the first time 'man'

or 'mortal.' I had to point this out before, when answering the objection that words could not claim any independent existence, which is true in one sense, but not in another. Nothing, it is true, can exist in language except what is a sentence, i. e. what conveys a meaning, but for that very reason it ought to have been perceived that every word must originally have been a sentence. The mere root, quâ root, cannot be called a sentence, and in that sense a mere root may be denied the dignity of a word. But as soon as a root is used for predication, it becomes a word, whether outwardly it is changed or not. What in Chinese is effected by position or by tone, namely the adaptation of a root to serve the purposes of words, is in the Aryan languages achieved by means of suffixes and terminations, though often also by change of tone. We saw that, in an earlier stage, the Aryan languages too could raise a root into a word, without the aid of suffixes, and that, for instance, YUDH, to fight, could be used in the five senses of the act of fighting, the agent of fighting, the instrument of fighting, the place of fighting, and the result of fighting. For the sake of distinction, however, as soon as the necessity began to be felt, the Aryan language introduced derivative elements, mostly demonstrative or pronominal, which though we can no longer trace them back in every case to their original source, must be credited with having had some original purpose. Thus from YUDH, we have—

(1) The agent of fighting, yodh-a.

(2) The act of fighting, yudh or yudhi (dat. yudh-aye).

(3) The instrument of fighting, (â) yudh-a.

(4) The place or time of fighting, yodh-ana.

(5) The result of fighting, yudh-ta (yuddha).

From KHAN, to dig, we have—

(1) The agent of digging, khan-i.

(2) The act of digging, khan-ana.

(3) The instrument of digging, khan-itra.

(4) The place or time of digging, khan-a.

(5) The result of digging khâ-ta, hole.

It must not be supposed, however, that language formed these five classes of words from every single root. Such words only were formed as seemed to answer some practical purpose. It also happened very often that one derivative was used with two or three different purposes, and that new derivatives were formed from old ones, till at last language had supplied everything that mind or heart could desire.

The First Category of Substance.

After we have once gained such concepts as digging, fighting, shaking, etc., what we really do in applying the so-called category of οὐσία or substance, is to predicate the roots embodying these concepts of him, or that, or here, or it. This simple process gives us the words expressive of Act, Agent, Instrument, Place, Result, etc. The demonstrative elements which were to express the subject were, no doubt, very vague at first, but in the earliest stages of language real demonstration or pointing with the finger, besides gestures and looks, were used to supplement the deficiencies of speech. In one sense this category of substance corresponds to what is called the category of causality. It names the objects as the causes of our percepts and concepts, and thus creates our objective world.

We saw that the adjectival categories of quale,

quantum, and ad aliquid, like that of substantia, were not used for the first time when people said 'the sun is bright,' but when they predicated the quality of brightness or the act of shooting out light, and said, as it were, 'brightness-here[1].' Adjectives, in fact, were formed, at first, exactly like substantives, and many of them could be used in both characters. There are languages in which adjectives are not distinguished from substantives. But though outwardly alike, they are conceived as different from substantives the moment they are used in a sentence for the purpose of predicating or of qualifying a substantive.

The Second, Third, and Fourth Categories.

The 'hole is dark' would have been expressed originally by 'digging-it' = 'hiding-here,' or 'hiding-somewhere.' 'Hiding-here' might afterwards be used in the sense of a hiding-place. But when it was used as a mere qualifying predicate in a sentence in which there was but one subject, it assumed at once the character of an adjective, it became really, to use Aristotle's expression, a ῥῆμα, not an ὄνομα.

In most languages, adjectives can be used again as substantives by adding an article. If sapiens is wise, hic sapiens is this sage. Likewise all substantives can be used as adjectives. If I say 'this man is black,' man is a substantive; if I say 'the black also is a man,' man is to all intents and purposes used as an adjective, and homo may in that case be replaced by humanus. In most languages, however, certain suffixes have been set apart, or have survived, definitely attached to adjectival functions.

[1] It is impossible to express the meaning of roots except by verbal nouns such as shining, or abstract nouns such as brightness. The Hindu grammarians use the locative of an abstract noun.

The categories of where and when, Kant's forms of intuition, are always secondary, because they presuppose substantives, pronouns, and adjectives, and further define them in space and time. I-bi, here, presupposes the pronoun i, this: noctu, by night, the substantive noc-tu-s. These categories are mostly represented by the cases of nouns and by adverbs.

The Fifth and Sixth Categories, Ubi and Quando.

The category of where (*πού*) must be taken to include whence and whither.

After a time local and temporal relations expressed by adverbs and cases of nouns assume a causal and modal meaning. Post hoc becomes propter hoc[1]; while is German weil, humanitus comes to mean humanely, *σοφῶς*, wisely.

While the first category predicates substance, the second, third, and fourth quality, the fifth and sixth place and time, the remaining categories predicate acts and states, or, in a very general sense, qualities continuing in time[2]. And here again the first verbal predication does not take place when we form a complete sentence and say 'the carpenter cuts,' but when for the first time we say 'cutting-I,' 'cutting-thou,' 'cutting-he.' While 'Dig-here,' i.e. digger, may be used as a substantive or as an adjective, but without any indication of the duration of the act of digging in time, it seems that in 'Dig-he' 'Dig' is the important element, which is predicated of me,

The verbal Categories.

[1] Leibniz, Nouveaux Essais, III, 5; Schopenhauer, Werke, ii. 49.

[2] Hence the German name for verb, Zeitwort. Aristotle, De Interp. 3, *ῥῆμα δέ ἐστι τὸ προσσημαῖνον χρόνον*; Poet. c. 20, *ῥῆμα δὲ φωνὴ συνθετή, σημαντικὴ μετὰ χρόνον.*

thee, him and it, and predicated as an act or state continuing in time.

These are the very broadest outlines[1] of the process by which conceptual roots were predicated, by which they came under the sway of the categories, became substantives, adjectives, adverbs, and verbs, or by whatever other name the results thus obtained may be described. The minute details of this process, and the marvellous results obtained by it, can be studied in the grammar of every language or family of languages.

General and Singular Terms.

Besides the division of words according to the ten categories, grammarians and logicians between them have introduced several other divisions which, as they constantly occur in philosophical discussions, must be subjected to a careful examination by the student of the science of language and thought. Some of these technical terms have been used in very different senses by different schools of philosophy; some seem to be of very little use, and it will be necessary therefore to determine which of them it will be expedient to retain, and what sense we ought to ascribe to them in the Science of Thought.

Logicians distinguish between Singular and General terms. The former are said to denote anything that exists or can be conceived to exist once only, such as Sokrates, the earth, the sky, the Bible, Parliament, etc. The latter are explained as the names of anything that exists or can be conceived to exist more than once, such as house, book, horse, man, etc.

[1] I have treated the same subject in my 'Letter to Chevalier Bunsen,' published in his 'Christianity and Mankind,' in 1853.

Let us remember what we had to point out before, that words can claim no separate existence, but are in reality always parts of speech, parts of a sentence. Singular and general terms, therefore, have likewise no independent existence, but are singular or general terms only in so far as they form part of a sentence. But though no words by themselves are either singular or general, we might say nevertheless, if our account of the origin of words is right, that every noun or ὄνομα is originally a general term, because it predicates a root, i.e. a concept, which is always general, of something. If rex, king, meant originally 'steering-here,' man-u-s, man, 'thinking-here,' these were by their very origin and nature general terms, applicable to all steerers and all thinkers. Only by being referred to this or that person did they become singular terms, as when we say 'this man,' or 'our king,' while they are general as soon as we use them in the plural, 'men,' 'kings,' or with the indefinite article 'a king,' 'a man.'

The right definition therefore of a singular term is that it is an originally general term referred to one person and in consequence used in the singular, while other general terms are referred to more than one person and used in the dual or plural. When I say 'this man is John,' 'this man' is a singular term: when I say 'John is a man,' 'man' is a general term.

When used with the indefinite article, a noun like 'man' or 'king' becomes at once an adjective, predicated of a, in the sense not of one, but of some one. It is a general term in a grammatical disguise.

Singular terms, in the strict sense of the word, are said to be proper names only, because they have no

intension, or, as others would say, because they denote one object only, and connote nothing. I say, they seem to do so, but they really do so in modern languages only, after they have lost their original connotation or attributive power. Originally every proper name was significant. Quintus, like Pontius, was really a name given to the fifth child, and as there might be fifth children in different families, it would have been quite possible to form a general proposition, such as, 'All Quinti are free from military service.' Short and Long, Brown and Black, were all originally significative, before they became proper names. Excepting such words as gas or od, nothing can exist in language which was not originally significative. Even John was in Hebrew a significant term, and when used as a Christian name, it meant originally a child whose saint was St. John.

After making this reservation, however, we may admit that, at present, proper names, having lost their predicative power, are singular, i. e. denote one person only, unless we raise them again into general terms by means of the indefinite article. When we speak of a 'Sokrates,' in the sense of 'a sage,' Sokrates has become a general term in disguise[1].

Sometimes the whole meaning of a term is changed, according as it is used as a singular or as a general term. When I say, 'Jupiter is a god,' god is a general term, applicable to several beings besides Jupiter. When I say, 'God is omnipotent,' God is a singular term, and excludes the very possibility of any other being that could be called God.

It has often been asked whether adjectives are

[1] See before, p. 438.

general or singular terms. Now it is quite true that adjectives were originally substantives, bright meant originally 'shining-somewhere,' green meant 'growing-somewhere,' just as rex meant 'steering-here.' It was by usage that certain of these substantives were set apart, in some languages at least, for adjectival purposes, i. e. for the purpose of predication and qualification only. Juvenis was used for young, albus for white, bonus for good, meaning no longer a young man, or a white thing, or a good thought, but the attribute by which a man is distinguished as young, not old, a thing as white, not black, a thought as good, not bad. In that form adjectives are general terms, though not substantival general terms, and, like all general terms, they could be used as singular also, as soon as they were joined with the definite article. 'Hic juvenis' is singular, and so is 'hoc album,' i. e. this white (spot) on a cow, or summum bonum, the highest good. When Horace says, qui miscuit utile dulci, 'he who mixes what is pleasant with what is useful,' he means 'whatever is or may be called pleasant with whatever is or may be called useful,' or, as we might say (for reasons to be explained hereafter), 'pleasure with usefulness.'

Are Adjectives General or Singular Terms?

In a sentence, however, an adjective as such is always meant for a predicate, it expresses a ποιόν, quale, not the οὐσία, substance, and as such it cannot be anything but general. Whatever view we may take of the operations of our mind and their expression in language, when we say 'this thing is sweet,' we do not mean that 'this thing is a sweet thing,'—experience never supplies a thing that is sweet and nothing else,—but that 'sweet' is one out

of many attributes of this thing. If we speak subjectively, we mean that the sensation of this thing, say sugar, is accompanied by the sensation of sweet, not by the sensation of another sweet thing. If we speak objectively, we mean that this lump of sugar is sweet, i. e. causes in us a sensation which we call sweet. Sweet simply signifies a class of sensations which go by that name; it cannot be called singular, therefore, in any sense of the word, but must be taken as general.

We cannot enter here on the question whether there is such a thing as a substance, different from its attributes, or attributes different from their substance. Language does not take cognisance of these refinements, but follows the vulgus. According to Berkeley[1], for instance, 'to say a die is hard, extended, and square is not to attribute those qualities to a subject distinct from and supporting them, but only an explanation of the word die, and a die is nothing distinct from those things which are termed its modes or attributes.' Philosophically there is much to be said for this, but it is not the kind of truth which we must expect from language. Language distinguishes between the die and its hardness, and while it would treat 'die' as a singular, 'dice' as a plural term, it would distinguish it carefully from 'hard,' for the simple reason that 'hard' cannot occur by itself, cannot stand on its own legs, can never be conceived as an individual.

Collective Terms.

Collective terms are really general terms which in certain languages grammar allows us to treat as singular terms. This, however, is not the usual explanation. Collective terms, we

[1] Works, i. p. 181.

are told, are words like regiment, names of a number of things joined together as a whole. Now this is true, as a matter of fact. A number of soldiers form a regiment, but the original concept of regiment is not a number of soldiers, but 'what is ordered or commanded by a general.' True collective words are equitatus, cavalry, which is really conceived as a number of equites, or senatus, which was meant for so many senes or old people as formed the council. Humanitas was meant originally for many men or all men, conceived as a class or as a whole, and this we see most clearly when we translate humanitas by man-kind. Our word youth, like the Latin juventas, stands for a number of young men, Romana juventas was meant for juvenes Romani. We may imagine some kind of difference between juvenes and juventas, but the difference is one of sentiment rather than of fact. These are the real collective terms, and we shall meet with them again, when we come to abstract terms, because many of them, without any outward change, have become, what are called, secondary abstract terms. Youth, like juventus, from meaning a number of young men, and all young men, has come to be used in the sense of the attributes of all young men, conceived as a whole. 'His youth has carried him away' means 'the qualities of young men, taken as a lump, have carried him away.'

The collective terms ordinarily mentioned as such in our Handbooks of Logic are Parliament, which is called collective because it consists of two Houses, each House, because it consists of many members; or the Bible, because it consists of many books or biblia. But in this sense almost every term may

be called collective. If Library is a collective term, because it contains so many books, so is book, because it consists of a collection of pages, so is page, because it consists of a collection of lines, so is line, because it consists of a collection of words, so is word, because it consists of a collection of syllables, so is syllable, because it consists of a collection of letters. I doubt whether anything is gained for logical purposes, if we extend the meaning of the name collective so as to comprehend all such terms.

Anyhow, if they are to be called collective, it would be desirable to have another class of partitive terms, and to call shilling, for instance, a partitive term, as opposed to sovereign, which would be a collective term.

It has been supposed that if singular terms correspond to Kant's category of Einheit, general terms to that of Mehrheit, collective terms would answer to the category of Allheit. This, however, is true of some collective terms only; what really corresponds to Allheit are universal terms, as when we use humanitas in the sense of mankind, i.e. all men.

There is no reason whatever why collective terms should be used as singular only. 'Parliament' in the sense of our English Parliament is, no doubt, a singular term, but we can use it as a general term, when we speak of the Parliaments of the world. 'Bible' is a singular term, but it becomes general when we speak of the Bibles of the human race. Only if collective terms have assumed a universal character, as in humanitas, mankind, it would be almost impossible to use them again as general terms, or to employ them in the plural.

Another very common division is that into abstract and concrete terms. It is extremely difficult to say what abstract and concrete mean, and a mere juxtaposition of the different definitions given of these terms by the most prominent philosophers would teach a very useful lesson. These terms have no inherent meaning of their own, so that we could say 'abstract means this, and does not mean that.' Even to say that abstract should mean this and not that, is more than any human being is entitled to do. But what every philosopher has a perfect right to say is that abstract, as used by him, shall have such and such a meaning. If Aristotle possessed that right, so did Mill [1]. Abstract means what Aristotle wished it to mean, or whatever any philosopher wishes it to mean. The authority of a man like Aristotle is no doubt greater than that of the ephemeral philosophers of our time, and to change the meaning of a name, invented and defined by one of the historical leaders of thought, is more or less presumptuous. Still it is far better that every writer should say in what sense he means to use a certain term, than that he should use it with a vague traditional meaning only.

Abstract and Concrete Terms.

Abstract is a term that goes back to Aristotle, not so concrete, and much confusion would have been avoided if, instead of concrete, logicians had been satisfied with using the term non-abstract. With Aristotle abstraction means principally the taking away or dropping of certain ingredients of our percepts. He applies it first of all to a work of art,

[1] Logic, i. 8, 7.

a statue, which comes by ἀφαίρεσις, i. e. abstraction, from a block of marble (Phys. i, 7); but afterwards to ideas, which by our dropping what is accidental in them are raised to their true and permanent form. Mathematics, for instance, are founded on ἀφαίρεσις or abstraction, because they treat of the necessary forms, without any reference to the matter of things. Thus abstract, according to Aristotle's view of aphaeresis, would mean everything which, as the general, has been separated in our thoughts from the singular, and in consequence can be no longer the object of sensuous perception, but of intellectual conception only[1].

Concrete, however, is not an Aristotelian term, though some scholars have taken it for a translation of συμπεφυκότα. The fact is that no name was really wanted for what remained after abstract terms had been distinguished by their own name. If abstract is the proper adjective of a concept, sensuous or intuitive would have been the proper adjective of a percept, and there was no necessity for inventing a new term, such as concrete. Nor is it quite clear who first introduced that term, and in what sense it was first used. Some think that concrete is that in which the quality has grown together with the substance, while abstract is the quality apart from the substance. Others, again, take concrete in the sense of solid, in which Lucretius uses it, for instance, in concreta copia materiai (Lucr. i, 1018). I should say that non-abstract or sensuous would be far more intelligible than concrete, and though it is impossible to get rid of so old a term as concrete,

[1] Metaph. xi (K) 3; xiii (M) 2.

it will be well to remember that so clear a thinker as Aristotle is not responsible for it.

Berkeley on Abstraction.

We saw before that some of our greatest philosophers deny that there is such a thing as a general abstract idea. Berkeley[1] scouted the thought that we could have abstract ideas, such as man, animal, body, and he only admitted some very primitive kind of abstraction, as when 'we consider the head, the eye, the nose, each by itself, abstracted and separated from the rest of the body.' Idea with Berkeley meant a picture or Vorstellung; an abstract idea, therefore, would have been with him a conceptual percept, which is self-contradictory. The followers of Hume might possibly look upon the faded images of our memory as abstract ideas. Our memory, or, what is often equally important, our obliviscence, seems to them able to do what abstraction, as Berkeley shows, never can do, and under its silent sway many an idea or cluster of ideas might seem to melt away till nothing is left but a mere shadow. These shadows, however, though they may become very vague, remain percepts; they are not concepts. Professor Huxley, in his Life of Hume[2], seems to imagine that such a transition is possible. 'An anatomist,' he says, 'who occupies himself intently with the examination of several specimens of some new kind of animal, in course of time acquires so vivid a conception of its form and structure, that the idea may take visible shape and become a sort of waking dream.' But a waking

[1] Treatise concerning the Principles of Human Knowledge, Introduction, p. 140.

[2] Page 96.

dream is not a concept, and his very words show that what he is speaking of is a faded percept, with here and there a sharp outline, but not what is meant by a concept. Noiré, speaking of the same mental process, says (Logos, p. 175): 'All trees hitherto seen by me may leave in my imagination a mixed image, a kind of ideal presentation of tree. Quite different from this is the concept, which is never an image.'

But though Berkeley denies the possibility of an abstract idea, taking idea in his own sense, we ought not to do him injustice. He fully admits, for instance, that we can reason about the length of a line without attending to its breadth; he only denies that we can have a mental picture of such a line. He uses notion in this case, and it would probably not have been difficult to convince him that what he means by notio, is nomen.

Mill on Abstraction.

I had to refer once more to Berkeley's view of abstraction, because it will help us to understand better the view of abstraction propounded by Mill and other modern philosophers. While Berkeley in his own philosophical dialect admits the possibility of a notion, or, what we should call, the concept of a line without breadth, Mill in his dialect denies that we can conceive it, because with him, in this passage at least, conceiving means imagining. 'We can reason,' he writes, 'about a line as if it had no breadth; because we have a power, which is the foundation of all the control we can exercise over the operations of our minds, the power, when a perception is present to our senses or a conception to our intellects, of attending to a part only of that perception or conception, instead of the whole. But we cannot conceive a line without

breadth, we can form no mental picture of such a line; all the lines which we have in our minds are lines possessing breadth.'

This shows how careful we must be in learning the dialect of each philosopher, though even then it is often not easy to get at the exact meaning of their words, as in this very passage it is difficult to know where, except in the mind, we can keep those lines about which we reason as if they had no breadth, and what we can keep of them except some kind of picture.

Mill's own account of abstraction is not very different from that which Berkeley tried to demolish, and, so far as I can judge, has demolished. According to Mill, the proper meaning of to conceive is to form a mental representation[1], and this would correspond to Berkeley's ideas. 'We get the conception of an animal,' he says[2], 'by comparing different animals, and when we afterwards see a creature resembling an animal, we compare it with our general conceptions of an animal; and if it agrees with that general conception, we include it in the class. The conception becomes the type of the comparison.' And again[3]: 'The mental operation which extracts from a number of detached observations certain general characters in which the observed phenomena resemble one another, or resemble other known facts, is what Bacon, Locke, and most subsequent metaphysicians have understood by the word Abstraction.'

This may be so, nor do I doubt for one moment that a logician is capable of performing that process. What I doubt, with Berkeley, is whether any other

[1] Logic, ii. 7, 4. [2] Ibid. iv. 2, 3.
[3] Ibid. iii. 2, 5.

mortal has ever passed through these trials. I believe, as I said before, that every honest reasoner will confess that Berkeley was right when he said that no one ever caught himself in this process of abstraction, that is, in looking at John, James, and Peter, and dropping their mouths, their noses, their eyes, and all the rest till nothing remained of them but the abstract idea expressed by the general term of man. What really takes place when we imagine we are forming abstract ideas is, according to Berkeley, that we use the signs of particular ideas, any one of which these signs or names indifferently suggest to the mind [1]. According to Locke, on the contrary, abstract and general terms are the signs of (also the only tangible proof of our possessing) abstract and general ideas.

In all this conflict of opinions the only point on which all philosophers seem to be agreed is our possessing general terms. They may differ about their nature and origin, but they cannot deny their existence. It is for the Science of Language to account for their origin and explain their real nature.

The Science of Language, by inquiring into the origin of general terms, has established two facts of the highest importance, namely, first, that all terms were originally general, and secondly, that they could not be anything but general.

Abstract originally the same as General Terms.

Before, however, we can fully utilise this discovery for our own purposes, it will be necessary to ask the question, whether there is really any difference between a general and an abstract term, and between a singular

[1] L. c. p. 144.

and a concrete term. This, to a formal logician, may sound a very heretical question, but to those who wish to study the historical growth of the human mind, it is a question that must be asked, and must be answered.

Whether abstraction means, according to some philosophers, the leaving out of certain parts of our experience, so that, for instance, there remains of animals nothing but their having four legs or their being quadrupeds, or whether, according to others, it means the drawing out of certain parts of our experience, so that in seeing animals we attend to nothing but their having four legs, in both cases it is clear that the term quadruped must be applicable to a class of animals, and must therefore be called a general term. Abstract and general are therefore two inseparable qualities of the same term, which is called abstract on account of the process by which it was obtained, and general on account of the character which it assumed.

Concrete the the same as Singular.

And if there is no real difference between abstract and general terms, neither can there be between their opposites, viz. between concrete and singular terms. We call them singular because they apply to objects which exist once only, and we call them concrete simply because they are not abstract.

Now what does the Science of Language teach us? It teaches, what cannot be repeated too often, that all names were originally both abstract and general, and that it was impossible that they could have been anything else.

We know as a matter of fact that every name was formed from one root, and from one root only.

Every root expressed originally a concept, viz. the consciousness of our own repeated acts, and even afterwards, when it came to express states of feeling, it always remained conceptual and general.

Every Name General and Abstract.

If, therefore, anything had to be named, its name, as derived from a root, could predicate one attribute only. Hence, even though the name was meant for an individual object, it was, by necessity, the name of other objects likewise, of all things, in fact, which shared in the same attribute, or, of a class of things. Thus in analysing, for instance, the name of wolf, Sk. *vṛ́ka*, we found that it was derived from a root VRA*SK*, to tear, to lacerate, and meant therefore originally no more than 'a tearing thing.' It might thus have been applicable to any animals dangerous to the homestead, to foxes quite as much as wolves, but by usage and by necessity it became restricted, till at last it meant wolf and wolf only. This process of restriction is essential for the purposes of language, and goes on to the present day. Thus the Greeks restricted ποιητής, maker, to a poet, the Romans auctor, to an author. Avica, bird, contracted to auca, became the exclusive name of the goose, alogon, brute, of the horse. And even at the present day people in Scotland speak of birds, when they mean partridges, of fish, when they mean salmon, and of the Book when they mean the Bible.

The same process of naming is repeated in later phases of language. The name for animal, for instance, meant originally no more than a thing that breathes, animal being derived from anima, and anima from a root AN, to breathe. It did not predicate voluntary motion, or anything beyond breath-

ing, all the other attributes of animals being understood, but not expressed.

In a similar way an elephant, besides many other names, was called hastin, from hasta, trunk. The trunk evidently struck people as an important character, as something by which this animal could easily be known and distinguished, and thus it supplied one of its names (gnomen). Other names, however, were not excluded, and we see in the history of language a constant repetition of that tentative process of knowing and naming, until, out of a large number of what Bacon might have called nomina temere a rebus abstracta, one survived as the fittest, its etymological meaning became forgotten, and its intension was settled in the end by scientific definition.

There was no other way of forming names. One attribute had to be abstracted, whether by attention to one, or want of attention to others, and that attribute, when expressed by a root, became the name, not of one only, but of all objects sharing in that attribute, till by the necessities of language, as a means of communication, it was more and more restricted, and by the necessities of language, as a means of exact reasoning, it was more and more accurately defined. Every name therefore was by necessity an abstract and a general term. This character was innate in every word, and though it became hidden when words were applied to singular and concrete things, it breaks out again at once, without any such complicated process as Berkeley derides and Mill believes in, as soon as the singular and concrete things vanish more and more from our mental focus, while the name remains what it was from the beginning, abstract and general.

As the whole of this phase, which in the history

of language and of thought lies beyond the formation and the final settlement of words, was unknown to earlier logicians, they are not to be blamed for not having perceived the real solution of the question, how abstract and general names arise. They naturally began with concrete and singular names, and they either were unable to get beyond them at all, as in Berkeley's case, or they invented what Green so graphically describes as a Donkey-race, in which he who knows least wins by arriving first at the highest and hollowest abstraction.

Later Phases of Abstraction.

Let us, however, now place ourselves in the position of those observers of human thought who, like Aristotle, had a ready-made language to think in, and knew nothing as to how they came into possession of it. If they had always used abstraction or substraction in the sense of ἀφαίρεσις or 'taking away,' or still better in the sense of dropping some portion of a name, whether singular or general, or letting it drop, and if all names thus affected had been called abstract or remainders (subtract), there would have been much less ambiguity in that term than there is now. We might well say then that all our words were formed by addition and substraction. By addition, when we collect several percepts under one concept, by substraction when we allow some of the contents of our concepts to drop out again. Concrete words would thus be names of a single thing as a whole, abstract words names of portions only, by whatever process these portions had been separated from the whole. It would then be seen at once that all names of attributes must by necessity be abstract, all names of substantial things concrete.

Thus house, like every other noun, contains in itself a predicate, and probably meant at first 'whatever covers,' 'a covering.' This I call a general and abstract term, and there is nothing single and concrete which could be said to be a covering and nothing else. But when I say 'this house' or 'my house,' I change the general and abstract into a singular and concrete term. I mean this one house with all that pertains to it. After that, in order to arrive at the general idea of house, I have not by a laborious process to leave out all that is peculiar to the house, its colour, its height, its door and windows. All this is really done for me. As soon as I have to speak of two or more houses, the singular and concrete name becomes general and abstract once more, without any help from me. Something of the meaning conveyed by 'this house' is dropped as soon as I speak of 'houses,' and a name is left which corresponds no longer to anything singular and concrete, to anything that we can touch or move. 'This house' or 'my house' was red or white, tall or low, with so many doors and windows; it stands in this street, in this place, and nowhere else. It exists once, and once only. But as soon as I form a plural and speak of houses, of two or three or many, their colour, their height, the number of their doors and windows, all is dropped as non-essential, and there remains only a general name applicable to many buildings, and an abstract name, abstract in the sense that a good deal of its varied original meaning has been dropped. We have nearly come back to the original general and abstract name, 'house,' which meant, 'whatever covers,' 'a covering.'

Or, let us suppose that we see a black man and

a white man. I am now speaking of a later period in the history of thought, when we already are in possession of such names as man, black, white. 'Man,' as we saw, was originally a synthesis of 'thinking' and 'here,' it expressed something general and abstract, rendered singular and concrete by the synthesis between thinking and here. With such words we are able to say 'this black man,' 'this white man.' But by saying 'black man and white man,' we ipso facto drop colour out of the intension of man, and 'man' is used pro tanto as abstract or subtract, and, at the same time, as a general name.

So we may go on applying the term man to more and more beings, to young and old, to small and tall, to deaf and dumb, till at last this term becomes so abstract, so emptied of its intension or connotation, that it may be applied to any extent to any human being of the male sex. Even that distinction is surrendered at last when we speak of a wif-man, i. e. a woman, or of Jedermann, every man, in the sense of every person.

We thus see how the same word 'man' can be applied as a singular and concrete term, when we simply denote one person as 'this man,' and as an abstract and general term, when we say 'every man' or 'all men,' i. e. all who are men, all of whom I may predicate the essential attributes of man. In the former case 'man' is as full of intension as it can hold, in the latter it is almost reduced to its first state of 'whatever thinks.'

If we look at this question first from an historical point of view, we ought to remember that adjectives were formed originally like substantives. Like substantives, therefore, they were abstract and general

terms, but they differed from other substantives, and began to form a class by themselves, because they lent themselves to be used as predicates rather than as subjects. This, however, did not prevent their being used, with the definite article or some other pronoun, as singular and concrete terms also, as when we speak of 'this black,' meaning 'this negro.' Here what is grammatically an adjective, is logically no longer a predicate, but has become a subject, and grammatically a substantive.

Are Adjectives Abstract or Concrete Terms?

The process is always the same. We begin by localising or concretising a concept, such as to beat, when we say 'beat-here.' If we take this as the name of an agent, we get a name for beater as a substantive, or for beating as an adjective; if we take it as the name of an instrument, we get a name for stick; if we take it as the name of the result, we get a name for beaten, and this again may be used either as a substantive, for instance, a beaten track, or as an adjective, meaning originally 'beaten,' but taking in several languages the meaning of 'black and blue.' This adjective 'blue,' if applied to many blows or wounds, is a general and abstract term, but if applied to one wound, it may once more become singular and concrete, so that 'this blue' may do service for 'this wound.'

If then an adjective, according to its origin, is general, for it can be applied to many, and abstract, because, to take the lowest view, it cannot be touched or moved, how is it that many philosophers, and particularly Mill, treat adjectives as concrete terms? It is because from adjectives new substantives are derived, as whiteness from white, and because, if

whiteness is abstract, white, it is supposed, must be concrete. Let us see what is the real difference between such terms as white and whiteness.

Abstract Terms derived from Adjectives.

We observed before that from collective terms, which are general terms, conceived as singular (senes = senatus), there is an easy transition to a new class of terms to which the name of abstract is commonly restricted, names which express the quality or qualities common to all members comprehended under these collective terms.

Sometimes there is no outward distinction at all between collective terms and the abstract terms corresponding to them. Youth means a collection of young men, e. g. the youth of Oxford, and likewise what is common to them all, as when we say, 'impelled by youth (youthfulness) they rushed forth!' The same applies to the French jeunesse. Thus humanity with us means mankind, but it also means the quality of mankind, humanity (humanitas). The old English name for wood is treow-cyn, lit. tree-kind. In order to avoid ambiguity, however, language tries to distinguish between collective and abstract terms. Thus priesthood is used as a collective term only (so many priests), manhood chiefly as an abstract collective term, expressing the essential qualities of mankind.

A very common derivative in the Teutonic languages is ness in English, niss in German. Its origin is difficult. It seems to have been originally ess and iss, but it became most popular after it had taken the initial n, due possibly to the last consonant of preceding verbal bases. It forms collective words as in wilderness, in German Wildniss, or in the

German Finster-niss, darkness. More generally, however, it forms nouns expressive of quality, such as wildness, stinginess, etc. Often these abstract nouns assume new meanings. Thus fulness has been transferred once more so as to express a mass (πλῆθος), and business, from meaning the state or quality of being busy, has come to mean the object of business, or what we are occupied with. Nay, highness in Your Highness has become a mere title.

It would seem, therefore, if we follow the indications left in language, that there was a possible transition from collective to abstract terms.

From a purely psychological point of view, however, another explanation of these terms may be and has been attempted. If we see a black man, a black woman, a black child, a black dog, and a black cat, it is possible that we may either allow black to drop throughout and thus arrive at a name applicable to man, woman, child, dog, and cat, namely animal; or we may allow man, woman, child, dog, and cat to drop, and thus retain black. But in that case, too, black is clearly an abstract term. It is not the name of things, but of something belonging to things, expressing a quality or an attribute that cannot be touched or moved. It can never be called a concrete name, till we join it with the article, and thus get 'this black,' i. e. this black man.

I call this process psychologically possible, particularly in the case of students of logic, but I doubt whether with the great majority of mankind it is ever performed consciously. Language would rather seem to perform all this for us. The mere addition of adjectives, such as black dog, white dog, large dog, small dog, reduces the full meaning of 'this dog' to

a mere shadow, i. e. to a general, and, in our sense, an abstract term. We may afterwards, as logicians, perform the same process consciously, but the number of logicians is small.

The question which I should like to ask is this:—We know that, historically at all events, there was a transition from the collective term juventus, i. e. youth, in the sense of many or all young men, to the abstract term juventas, youth, in the sense of youthfulness, the quality peculiar to many or all young people. Is it not possible that there was a similar connecting link between white and whiteness, and that whiteness was really at first a kind of collective term for every kind of white, and became at last what we now call par excellence an abstract term? In that case language would have passed, for instance, from dark to darkness, a collection of dark, and lastly to darkness, the quality of the former; or in German from wild to Wildniss, a collection of wild, a wilderness, and lastly to Wildniss, in the sense of Wildheit, the quality of all wild things. If this path was once opened, it would be followed by the mere force of analogy in many cases where the connecting links were never thought of. But it is the premier pas that has to be explained, and the explanation here suggested is not without analogy in certain other cases[1].

Subtract and Abstract Terms.

In order to distinguish these abstract terms, as here defined, from general and abstract terms in the ordinary sense, I mean names like man, dog, and tree, it would be very desirable to have two terms. Some have suggested

[1] See 'On the suffix tâti,' before, pp. 248–255.

'abstract terms of the first and second degree,' but this is cumbersome. I should myself prefer to call words like man, dog, and tree, subtract terms, because what they name has been separated and subtracted from a fuller mass of sensuous experience, while I should wish to reserve abstract for collective names of quality, such as whiteness, youth, etc. I fear, however, that custom is too strong, and that here as elsewhere loquendum cum vulgo.

Mill's Terminology.

It is well known that Mill in his Logic strongly objects to that definition of abstract and concrete which I have adopted, and still more to the identification of abstract with general, and concrete with singular [1]. 'A practice,' he writes, 'has grown up in more modern times, which, if not introduced by Locke, has gained currency chiefly from his example, of applying the expression "abstract name" to all names which are the result of abstraction or generalisation, and consequently to all general names, instead of confining it to attributes. The metaphysicians of the Condillac school . . . have gone on imitating Locke in this abuse of language, until there is now some difficulty in restoring the word to its original signification.' He finishes by saying, 'By abstract then I shall always in Logic proper, mean the opposite of concrete; by an abstract name, the name of an attribute; by a concrete name, the name of an object.'

Nothing can be more excellent so far as Mill's own terminology is concerned, but Locke and Condillac may surely claim the same right which he claims of

[1] Logic, i. 2, 4; Jevons, pp. 20–21.

defining the name concrete and abstract from their point of view. He appeals to the authority of the schoolmen, and calls any deviation from this terminology wanton. I admire the schoolmen as much as anybody, but if I take ἀφαίρεσις in the sense implied by Aristotle, or in a sense more in consonance with the history of language, of which the schoolmen knew nothing, I do not think that this can be called mere wantonness.

I am as much in favour of keeping old bottles as Mill can be, but it does happen from time to time that new facts will burst the old terms. Now the Science of Language has supplied us with many new facts, particularly with regard to the origin of words, and if it has taught us anything, it has taught us that two different words do not always imply two different concepts. I believe that with the simpler terminology which I have adopted, identifying singular and concrete, general and abstract names, I can still distinguish all that really requires distinction, without attempting to distinguish what ought not to be distinguished. I hold that as soon as I speak of trees in the plural, I use a general term, applicable to many, and an abstract or subtract term, because all that distinguishes one tree from another is gone. I also hold that as soon as I drop the peculiar foliage of this and that tree, whether leaves or needles, I arrive at a tree, a something which never exists and cannot exist in rerum naturâ, an abstract term therefore, if any deserves to be called abstract, and, as such, predicable of many, or a general term. Again, if we adopt the usual view of logicians, 'this green tree,' as soon as I drop everything but its colour, leaves me in possession of the word 'green,'

which is abstract, and, as applicable to ever so many trees, general.

I do not quarrel with Mill's definition of abstract and concrete, as different from general and singular, but even accepting his definition of these terms, I cannot reconcile them with his own statement, that an adjective, such as green, is concrete. What are adjectives but the names of quality, and if names of quality, according to Mill's own showing, are abstract, how can adjectives be concrete? Mill[1] admits himself that an attribute is not a real thing, possessed of objective existence, but a particular mode of naming our sensations, or our expectation of sensations, when looked at in their relation to an external object which excites them! If then that object is concrete, how does it differ from its attributes which are not, as Mill expresses it, real things? And yet in another place Mill writes: 'Names of qualities and names of substances stand for the very same sets of facts or phenomena; whiteness and a white thing are only different phrases, required by convenience for speaking of the same external fact under different relations[2].' Surely that is not so in English. When I say 'the snow possesses whiteness,' I mean something very different from what I mean when I say 'I see a white thing.' By a 'white thing[3]' I mean some thing capable of existing in and by itself, and not as a quality of some other thing, and Mill by identifying whiteness and a white thing seems to me guilty of the same petitio principii

[1] Logic, ii. 2, 4.

[2] Ibid. v. 3, 4.

[3] See Aristotle, Post. Analyt. xxii. 7: *Ὅσα δὲ μὴ οὐσίαν σημαίνει, δεῖ κατά τινος ὑποκειμένου κατηγορεῖσθαι, καὶ μὴ εἶναί τι λευκόν, ὃ οὐχ ἕτερόν τι ὂν λευκόν ἐστιν.*

which he blames in Plato, who from the fact that justice and wisdom, though incorporeal, must be something, argues that incorporeal things may exist[1]. It may seem very disrespectful to speak in such terms of so great a logician as Mill, but I may honestly say I have tried very hard to reconcile his various utterances about adjectives or names of attributes being concrete names, but I have not succeeded. I hinted before that the reason why Mill and those who follow him treat adjectives such as red or useful as concrete, might have been that abstract terms can again be derived from them, such as redness and usefulness. But this would not be a sufficient reason. If I say 'this red house,' the three words together form no doubt a concrete term, and so would 'the white house,' 'the tall house,' 'the square house,' etc. But when I drop house, and speak of 'red,' 'white,' 'tall,' 'square,' these terms are abstract, whether we mean by abstract 'drawn from' or 'left behind.' Red can never exist, and can never be perceived by itself; it comes to us always as belonging to other things, and only after allowing those other things to vanish from the focus of our mind can we think or speak of red.

But though red by itself can never stand as the name of a substance, it may perfectly well become the subject of a proposition, as when we say 'the red of the rainbow,' and speak of it as different from the blue and the green. Some people may say that by 'the red' we mean the red colour, but, if so, nothing can be more abstract than colour, nor would colour mean any more than our sensation of red

[1] Logic, v. 7, 2.

objectified. It seems to me, that when we speak of the red of the rainbow, 'the red' is here an abstract term used as a subject, and differs but little from 'redness,' which everybody admits to be an abstract term. In Latin album is used in the sense of whiteness, utile and dulce mean usefulness and pleasure. Even in modern languages we speak of the cool of the evening instead of the coolness, and there are adjectives which have no corresponding substantival forms at all, such as for instance, violet, purple, etc. Here it becomes quite clear that if we speak of the violet of the clouds, we mean not only what is violet in them, but the abstract quality of violet, what we should call violetness, if language allowed us to do so.

Connotative and Denotative Terms.

There is one more division of terms or names which has been revived by Mill, and which he considers of great importance, but which to me seems a mere encumbrance of Logic; I mean the division of all names into Connotative and Denotative. This division too has been borrowed from the schoolmen, and I do not mean to deny that the two words, to connote and to denote, are often very useful in logical and etymological discussions. 'A name is said, in the language of logicians, to denote the objects and connote the attributes. White denotes chalk and other white substances, and connotes the particular colour which is common to them. Bird denotes eagles, sparrows, crows, geese, and so forth, and connotes life, the possession of wings, and the other properties by which we are guided in applying the name. The various objects denoted by the class-name are what is meant by the Extension of the concept, while the

attributes connoted are its Comprehension or Intension[1].' All this is very true and clear. What I object to is the supposition that denotative is anything but a new name for singular and concrete terms. Even the point of view which we have to take in dividing names into connotative and denotative is not a new one. It is the same which we occupy when we distinguish between the intension and extension of terms[2]. Let us take an instance. The extension of such a word as planet consists of Jupiter, Venus, Saturn, etc., its intension is a round body revolving elliptically round the sun, etc. Is there any difference between this and our saying, the term planet denotes Jupiter or Venus or Saturn[3], etc., and connotes a round body revolving elliptically round the sun? Then why introduce new technical terms? It is convenient, no doubt, to have two expressions for the same thing, particularly as we have no verbs corresponding to extension and intension. But if that convenience is bought at the expense of clearness of thought, it is too dearly bought.

I go even a step further, and I maintain that, speaking strictly, all singular and concrete terms denote, all general and abstract terms connote. I do not mean to say that the meaning of these three names, singular, concrete and denotative on one side, and general, abstract and connotative on

[1] Mill on Hamilton, p. 389.

[2] Thus the intension of a term is synonymous with its comprehension or connotation, or depth; while the extension is synonymous with the denotation or breadth. Jevons, Lessons, p. 39.

[3] I think we ought to say or, not and.

the other, is exactly the same, but I do mean that these names refer to the same classes of words under slightly different aspects. The same words fall into the one or the other class. For instance:

Singular: this planet, which exists once only, say Jupiter.

Concrete: this planet, which can be seen, if not touched and moved, say Jupiter.

Denotative: this planet, say Jupiter and for the time being no other.

General: the planets, several in number, whatever moves round the sun elliptically.

Abstract[1]: the planets, in general, different from any planet in particular.

Connotative: the planets, quâ bright, heavenly bodies, round, moving elliptically round the sun, attracted by gravitation, etc.

It has been pointed out by Jevons and other logicians that, in spite of its great length, Mill's definition of denotation and connotation, of non-connotative and connotative terms, is by no means clear, while Mill himself admits how much it differs from that accepted by his father, James Mill.

Without entering here into this controversy, I cannot suppress a wish that these two words, to denote and connote, might be set entirely free from their present logical bondage, so that they could be used for a new purpose by the student of language. It would be most desirable to be able to distinguish by short technical terms between the etymological

[1] If Mill says that abstract names are usually non-connotative, but may be connotative in some cases, this arises from the uncertainty of his definition of abstract. See Jevons, Lessons, p. 44.

and the historical meaning of words. I should like to be able to say that bhrâtar, brother, for instance, denotes one or more persons by the one attribute of carriers, on account of which attribute the name is given, while it connotes all the attributes which belong to a bhrâtar or carrier, as evolved gradually by experience, and in the end settled by definition. I should say on the same principle that triangle denotes a thing with three angles, and nothing else, but that it connotes being enclosed in three lines and all other qualities which geometrical research has discovered and may discover in a triangular figure. Planet again would be said to denote a wandering star, but to connote all that we know of planets. This comes very near to Mill's definition[1], but that is the very reason why I fear that it would be misleading to use these terms in this new meaning. With Mill a non-connotative (denotative) term signifies a subject only, a connotative term denotes a subject and implies an attribute. I should prefer to say that a denotative term denotes a subject by means of one attribute only, namely of that expressed by the root from which it is derived, a connotative term denotes a subject and implies all attributes that have been discovered by continued experience.

However, 'to signify' answers nearly the same purpose as 'to denote,' 'to imply' the same as 'to connote,' and where an ambiguity can arise, it may, for the present at least, be better to say, bhrâtar signifies (or denotes) a person, quâ carrier, and implies (or connotes) humanity, manhood, kinship, kindliness, etc.; that ἀδελφός signifies a co-uterinus, and that

[1] Logic, i. 2, 5.

it implies, like bhrâtar, humanity, manhood, kinship, but perhaps less of kindliness and helpfulness than bhrâtar, brother.

I should suggest then, with all respect for the minute distinctions introduced into the classification of words by schoolmen and by modern logicians, that the best classification is that which is supplied by the history of language. That history teaches us that language began with roots, expressive of the consciousness of repeated acts, or, of concepts.

These concepts would be predicated, as follows :—.

ROOTS OR CONCEPTS.

1. Substantives,
   a. Singular and Concrete,
      as subject: This cutter cuts.
      (as predicate: John is this cutter).
   b. General and Abstract,
      as subject: Cutters cut, a cutter cuts.
      (as predicate: John is a cutter).
   c. Collective, General as Singular,
      as subject: Some cutters, cutter-class.
   d. Universal,
      as subject: All cutters, cutter-kind.

2. Adjectives and Verbs,
   a. Singular and Concrete,
      (as subject: This cutting one cuts).
      as predicate: John is this cutting one, John cuts.
   b. General and Abstract,
      (as subject: cutting ones cut, a cutter cuts).
      as predicate: John is a cutting one.
   c. Collective, General as Singular,
      as subject: The sharpness of weapons.

The Categories in Language.

After having examined these various divisions of words which have been introduced by logicians, let us return now to the oldest division of all, a division which grammarians borrowed from logicians, namely that according to Aristotle's categories.

I tried to show that what logicians call the categories, and what grammarians call the parts of speech, must be traced back to a far earlier period in the growth of the human mind than has hitherto been supposed. These categories are not only forms of language and thought, they are the antecedent conditions of language and therefore of thought. If we are to speak and think at all, we must be able to predicate substance and quality and action, and in this sense Kant was perfectly right in treating the categories as the sine quâ non of all speech and all thought, and those of ubi and quando as the sine quâ non of all sensuous intuition. Schopenhauer also was right when he claimed for causality the place of the fundamental category, for what he means by causality is really what Aristotle meant as the category of οὐσία. It is the impulse of causality which makes us demand for every perception a there, and this there, if we think about it, is really meant as thence, namely as the cause of our sensations. Where Schopenhauer seems to me wrong is in denying to the other categories their fundamental character. No doubt, they would come genetically after the category of causality, and Aristotle himself calls them the δευτέραι κατηγορίαι, but they must be, to use Kant's language, given, quite as much as the first category, unless we look upon them as the result of repeated experience, that is, unless we forget Kant's first lesson, that no experience would have been possible without them. Without these categories man would indeed be ἄλογος, that is, not only speechless, but mad.

The only difference, if there is any, between Kant's view of the categories and my own is that Kant

takes them as the sine quâ non of thought in the abstract, while I take them as the sine quâ non of thought, as embodied in language. And this will really serve to facilitate the proof of the à priori character of the categories. Kant has to show, for instance, that we could not conceive one, many, or all, if nothing were given us but the impressions of the senses, that the counting or summing up is our doing, and that no thought would be possible without it. I simply appeal to the evidence of language to show that no language is possible, unless we are able by some means or other to distinguish in it the subject of a sentence as either one, many, or all. It does not matter how it is done, whether by repetition, or by numerals, or by terminations of the singular and plural; but it must be done in some way, before we can call our utterance language.

The same applies to all categories. If Aristotle says that we must employ, first of all, the category of οὐσία, I say, we cannot think without substantives. If Aristotle says that we must employ the other categories (δευτέραι κατηγορίαι), I say we cannot think without adjectives, numerals, relative words, adverbs, and verbs, in their various applications. I appeal to facts, and for the purpose of proof, facts have their value, though, on the other hand, theory may be said to be more instructive than mere facts.

Roots used categorically.

By applying the ten categories to the conceptual roots, or by predicating roots in ten different ways, we gain the whole wealth of language. Whether with or without outward distinctions we gain—

(1) Substantives, e. g. from DHÎ, to meditate, Sk. dhî-s, meditating, place of meditation,

prayer (instrument), praying (act), prayer (result).

From DÂ, to give, Sk. -dâ, or dâ-tar, giver, dâ-nam, gift, etc.

(2) Adjectives.

(a) quantitative, from DAK, to show, da*s*an, ten.

(b) qualitative, from *S*UBH, to shine, *s*ubh-ra, bright.

(c) relative, from MA*m*H, to be great, major, greater.

(3) Adverbs and cases.

(a) local, from VI*S*, to enter, vi*s*-i, in the village; from i, this, i-bi, here.

(b) temporal, from DIV, to shine, div-â, by day.

(4) Verbs.

(a) situs, from STÂ, to stand, ἔστην, I stood.

(b) habitus, from DÂ, to bind, ὑποδέδεται, he is shod.

(c) actio, from TAM, to cut, τέμνει, he cuts.

(d) passio, from TAM, to cut, τέμνεται, he is cut.

It should not be supposed that there is anything mysterious in the application of the ten categories to the roots. The origin of roots we have explained in the most simple and natural manner. Their modification by means of the categories is equally natural and simple. What we call categories are the only possible ways in which we can use our roots. They are necessities, they are, if you like, pure reason, and to reasonable beings they are not the most mysterious, but the most reasonable of all things. What could I do with the root Dig, if not to say that I dig? In

doing this I use not one, but several categories. In the language of logicians I use the seventh category of κεῖσθαι (I am in a state of digging), and I use at the same time the first category of οὐσία (I, the agent), and the second category of ποσόν (I, as one, not as many). That sounds very learned, but it means no more than that I predicate digging of myself, and that I am one, not many. As soon as I add an object, as soon as I say I dig a field, I employ the ninth category of ποιεῖν, while, if I am being dug into, or, it may be, wounded by a spade, I naturally intend the tenth category of πάσχειν, in whatever way it may be expressed in different languages.

It stands to reason that not every root can lend itself to all categories. We could predicate the root Dig in the third category, τὸ ποιόν, if we had to declare that a certain tree was dug up or dug out, that is, hollowed out so as to be fit for a boat. But it would be difficult to use this root in the fourth category, πρός τι, or in the second, τὸ ποσόν, unless it had first passed through the first category of οὐσία. The same applies to the fifth and sixth categories, the ποῦ and ποτέ, though such expressions as 'in the place of digging,' or 'at the time of digging,' might be formed directly from the root, provided that the root had first been raised to the dignity of a substantive or received the baptism of the first category.

Even this first product of multiplication of say a thousand roots with ten categories, would give us ten thousand words, and for carrying on the ordinary work of a primitive society we know that one thousand words would be ample. The first outgrowth.

But this is not all. We must bear in mind that

after a root has once been raised to the dignity of a word by the application of one category, and generally by the addition of a suffix, that word, by the application of other categories, may be made to produce a number of new words.

Categories applied to Words.

A very important class consists of words formed by applying the first category to words of the second. This, as we saw, gives us names of quality, whiteness instead of white, goodness instead of good. A quality may be conceived as a subject, as the subject of a sentence, though it can never become a substance, in the ordinary sense of the word. It cannot be conceived to exist by itself. It is quite true that neither can substances be conceived to exist by themselves or without attributes. But there remains the distinction that attributes are predicated of substances, never substances of attributes. White may be used to signify that which makes a white thing white, but it always remains an attribute of something; and though we may predicate something of it, namely whiteness, or even different shades of whiteness, yet the white, even as a subject, can never become what we call a substance, a something substantial, an ὄν. White as an attribute is always an abstract name, while whiteness may be called an abstract name of the second degree[1]. If we predicate white of all white objects, we predicate whiteness of that which is supposed to make them white, i. e. of the light and colour peculiar to them. We may again

[1] Schopenhauer, Werke, vol. ii. p. 49, compares terms such as man, horse, to the ground-floor; terms such as virtue, relation, to the first-floor of the house we live in.

predicate of whiteness, for instance, that it is pleasant, just as we predicate of snow that it is white[1]; but here, though whiteness is the subject of a sentence, it has no right to be called a substance. Such names admit of the most varied application. They begin as names of qualities, and often end by becoming powers, or even gods and goddesses.

From amicus, friend, for instance, is formed amicitia, the quality of friends, but also the state of friends, the duty of friends, the sentiments of friends, lastly, the cause of that sentiment, the ideal, the goddess.

From purus, pure, we have purity, the quality and state of being pure, the sentiment, the fountain of that sentiment, and again some kind of ideal or goddess of purity.

Sometimes by applying the first category to words of the third we get collective words. Thus while juvenis, young, as a ποιόν, becomes juventus, the quality of being young, the plural of juvenis is raised to a collective noun, and juventus, youth, comes to mean all youths, conceived as one class. These two words often run together both in form and meaning, and show by what process collective words may become abstract terms[2].

Many adjectives are formed by applying the second category to the first. Thus from equus, horse, we form equinus, possessing the qualities of a horse; from homo, humanus, possessing the qualities of a man. From this we derive, as before, humanitas, either as a collective term, mankind, or as the hypostasis of all that constitutes man, humanity.

[1] T. H. Green, Works, ii. p. 205.

[2] See before, p. 464.

Even from a singular term, such as Peleus, may be formed an adjective Pelides, meaning originally connected with or descended from Peleus, and this may be used either as a singular, or, if applied to many, as a general term.

From Roma is formed Romanus, originally an adjective, but in course of time changed into a substantive.

The fourth category, of πρός τι, can be applied to every adjective, changing longus, for instance, into longior, etc.

Most nouns belonging to the first category can be used in the fifth and sixth categories, whether through declension, or by means of adverbial suffixes. Thus from coelum, sky, we have coeli, in the sky, from vesper, evening, vespere, in the evening, to which we may add, coelitus, from the sky, and even coelum, towards the sky. All adverbs which have now a causal or modal meaning were originally local and temporal. Thus σόφως, wisely, was originally 'proceeding from what is wise,' just as humanitus, humanely, meant originally coming from what is human, like coelitus, coming from the sky. Δημοσίᾳ, publice, was in public, then publicly; ἰδίᾳ, in private, then without. Thus ὅπου means where and as; ἐπεί, after and because; quum, when and because; just as in English hence may mean because, and then therefore.

From adverbs also adjectives and substantives may be formed, as in Sanskrit from tatra, there, tatratyas, he who is there, Germ. dortig; from ni, in, ni-tyas, he who is within[1], Germ. innig.

[1] Vedic Hymns, i. 1, 166, 2, note.

By applying the seventh, eighth, ninth, and tenth categories to nouns or adjectives, verbs can be derived in any quantity. From bronze we can form in the eighth category to bronze, i. e. to have assumed a bronze-like colour; in the ninth category, to bronze, i. e. to produce such a colour; in the tenth category, to be bronzed, i. e. to have received the same colour.

Verbs, as is well known, are most prolific in substantives as well as adjectives. There are recognised forms, such as active and passive participles, for forming adjectives and substantives. Sapiens, as an adjective, is knowing, as a substantive, a sage: factum, as an adjective, is done, as a substantive, a fact. Caesum, as an adjective, is cut; as a derivative adjective, caesius means bluish, the colour of a wound [1].

Composition.

The number of words thus gained by the simple multiplication of roots by categories can be still further raised by composition, so that few wants of body or mind would remain unprovided for. Thus horse and man would give us quite a new concept, namely horseman, eques, a rider. We get householder from household, i. e. what is held together as one house; housekeeper, from house and keeper, a steward, i. e. ste-ward, a sty-guardian.

I shall only dwell here on one class of compounds, namely those formed by prepositions.

Prepositions.

By means of prepositions the meaning of verbs can be multiplied in the most surprising way, and if we consider that from every such compound verb a number of substantives,

[1] See Hibbert Lectures, p. 43.

adjectives, and adverbs can again be derived, there seems to be no limit to the increase of the wealth of language. Thus, if we take so simple a root as BHAR, to bear, in Greek φέρ, we get:

ἀνα-φέρω, I lift, I bear, I refer back to some one; hence, ἀναφορεύς, wood placed across the shoulders for carrying water, etc.; ἀναφορά, reference.

ἀντι-φέρω, I carry towards, and ἀντι-φέρομαι, I measure myself against another.

ἀπο-φέρω, I carry away; hence ἀποφορά, tribute.

δια-φέρω, I carry over, I spread, I delay, I am away or different, I excel, etc.; δια-φέρομαί τινι, I differ with a person; πλεῖστον διαφέρει μοί τινος, lit. very much lies between me and it. Hence διαφορά, difference, quarrel, advantage; διάφορος, different, excellent; ἀδιάφορος, indifferent; ἀδιαφορία, indifferences.

εἰς-φέρω, I carry in, I contribute; hence εἰσφορά, tribute.

ἐκ-φέρω, I carry out, I publish, I produce; I bury; hence ἐκφορά, funeral; ἐκφόριον, the produce of the soil.

ἐμ-φέρομαι, τινί, I am like; hence ἐμφερής, like, ἐμφέρεια, likeness.

ἐπι-φέρω, I add; hence ἐπιφορά, addition, attack, syllogism; ἐπιφόρημα, dessert after dinner.

κατα-φέρω, I carry down; hence καταφορά, falling down, blow, deep sleep; κατάφορος, rushing down; καταφερής, sloping, prone.

μετα-φέρω, I carry somewhere else; hence μεταφορά, metaphor.

παρα-φέρω, I carry away, I pass by; hence παραφορά, madness.

περι-φέρω, I carry round, I make known, I endure,

I come round, I recover; hence *περιφέρεια*, periphery, *περιφορά*, revolution of a wheel, vault of heaven.

προς-φέρω, I bring towards, I bring in, I benefit; hence *προσφορά*, offering, gift, food, income; *πρόσφορος*, useful, zuträglich; *τὰ προσφερόμενα*, food and drink.

προ-φέρω, I bring forth, I reproach, I further, I excel, I grow; hence *προφορά*, pronunciation, utterance, reproach; *προφερής*, excellent, advanced in years.

συμ-φέρω, I bring together, I add, I help; I bear in common with; hence *σύμφορος*, useful; *συμφορά*, accident, misfortune; *συμφερόμενα*, events.

ὑπερ-φέρω, I carry beyond, I excel; hence *ὑπερφερής*, excellent.

ὑπο-φέρω, I support, I reproach, I bring down; hence *ὑποφορά*, carrying off, purging, drain, excuse.

This is but one root out of many, nor have I given by any means the whole mass of words that can be traced back to it. But this one case will suffice to show with what small means language has contrived to produce all that is wanted to comprehend the whole universe of thought, and how much simplicity there is behind the apparent complexity of our vocabulary.

Metaphor.

More important, however, than any of the contrivances for the increase of words which we have hitherto examined is the influence of what commonly goes by the name of Metaphor. Metaphor, in our sense of the word, is to language what rain and sunshine are to the harvest. It multiplies each grain a hundred and a thousand-fold. We must therefore try to under-

stand clearly what we really mean by this ancient classical term.

I have treated of Metaphor very fully in my Lectures on the Science of Language (vol. ii, Lecture 8), but with more special reference to its influence on Mythology. I shall therefore confine myself here to some general remarks on the place which metaphor holds, among other processes, in the creation and formation of our words and thoughts.

Metaphor represents a whole stage of thought through which every language must pass, though its power and influence cannot be confined within strictly chronological limits, but will assert themselves again and again, when favourable circumstances arise.

When treating of Metaphor in my Lectures on the Science of Language, I endeavoured to establish a distinction between two classes of metaphors, which I called radical and poetical. I meant by a radical metaphor the transference of one and the same root to different objects, as when in Sanskrit both the sun and a hymn of praise are called arká, from a root ṚK, to shine, the one in the sense of what shines, the other in the sense of what makes shine, or what blazes forth the glory of a god. When from the root VṚ, to cover, the Hindus derived Var-una (Οὐρανός), the covering sky and the god of the sky, and likewise Vri-tra (Ὄρθρος), the covering darkness, the cloud, the enemy of the bright gods; when from a root PRÂ, meaning originally to blow, to let forth, was derived πρηστήρ, a storm, but also πρήθω, to burn; or from a root AN, to blow, the Sanskrit anala, fire, and anila, wind: all this was what I meant by radical metaphor. Perhaps the name

was not well chosen, because it is rather a process of diaphora, of carrying the root with its concept to this and that object, than a metaphora, or transference from one object to another; yet, for practical purposes, metaphora, applied in this sense, can hardly be misunderstood, and, as guarded by a proper definition, it might well be kept.

But at all events this process is different, and ought to be distinguished from another, namely, the transference of ready-made words from one well-known object to another equally well-known object, as when poets call the rays of the sun arrows, large waves white horses (cavalli), small waves moutons, Italian pecorelle, or when, as in French, the sky covered with thin white clouds is called ciel moutonné, and Virgil says Lanae vellera per coelum feruntur. Such metaphors I wished to distinguish as poetical, and for a proper study of comparative mythology the distinction seems to me of considerable importance.

Dr. Brinkmann, in a work of great learning and research, entirely devoted to the subject of metaphor[1], has found fault with this division; but, so far as I can judge, from a misapprehension of the meaning which I attached to these names of radical and poetical metaphor. He says (p. 43) that I ought to have divided all metaphors into radical and non-radical, and into poetical and prosaic. This dichotomous process may be right from a logical point of view, but it would hardly have answered my purpose. I did not take poetical in the sense of metrical,

[1] Die Metaphern, Studien über den Geist der modernen Sprachen, I. Buch, Die Thierbilder der Sprache, Bonn, 1878.

and therefore could not have used prosaic as the complement of poetical. My object was an historical division, and if I had cared for apparent logical accuracy rather than for clearness of expression, I might have divided metaphors into radical and verbal. By radical metaphors, as I explained, I mean those which determined the application of certain roots to objects apparently so different as sun and hymn of praise, wind and fire, etc. The metaphor in this case affected the root; and it was not only difficult, but impossible, to say in each case whether roots, after having attained a general meaning, had been specialised, or whether a root of special meaning had been generalised, while being applied to the expression of various concepts. If, instead of calling all the remaining metaphors verbal, I preferred to call them poetical, it was partly because verbal is now chiefly used in opposition to nominal, partly because I wanted to imply that these metaphors constituted pre-eminently the innate poetry of language. These metaphors, the unconscious poetry of language, were originally as much an act of poetical genius performed by a forgotten poet as was any metaphorical expression of Shakspeare or Goethe. But from our point of view there is a difference, and a very important difference, between a metaphor that has been so completely absorbed into the blood of a language as no longer to be felt as a metaphor, and others which we use with a conscious feeling that they are our own work or the work of some one else, and that they require a kind of excuse, or even an interpretation. Aristotle (Poet. c. 21) calls such metaphors artificial (πεποιημένα), as when some poets call the horns 'small branches' (ἔρυγες), or a priest

'one who prays' (ἀρητῆρ). It is the same term which he uses of artificial words, which we call onomatopœic.

I confined my observations chiefly to a consideration of metaphors which have become part and parcel of a language, what Dr. Brinkmann would call incarnate metaphors, such as when the central spot of the eye is called the pupil, the little girl, in Spanish, la niña de los ojos; or when a machine for battering is called a battering-ram (aries); or another for lifting is called a crane. Such metaphors are very numerous. Thus the name of donkey, in German, Esel, is used in English as the name of a support for pictures (easel). In Spanish la borrica del hato, 'the she-donkey of a bundle of clothes,' is used to signify a shepherd's wallet. In Greek donkey (ὄνος) is used for windlass, the upper millstone, and a distaff. When the Aryans had discovered that the soil, after having been raked up, proved more fertile, and when they had contrived some crude kind of plough, the essential part of which consisted in a piece of wood, stone, or metal that tore open the soil, how were they to call it? Such words as the Sanskrit go-dara*n*a, earth-cleaver, are late. Ancient languages were shorter and less analytical. Having watched the propensity of pigs to scratch the soil with their noses, some of the Aryans called the plough the pig, the ploughshare the pig's snout. Thus Pâ*n*ini tells us (iii, 2, 182) that potram in Sanskrit meant both a pig and a plough; Halâyudha states that protham is the name of the snouts both of the plough and of a pig. Plutarch goes a step further, and asserts that the first idea of a plough came from watching the pig burrowing, and that hence the

ploughshare was called ὖς. The French soc also, the sock or share, has been identified with the Cymric hwch, the Cornish hoch, meaning pig, snout, and plough[1]. It is curious that the Latin porca, a ridge between two furrows, is derived from porcus; and that the German Furche (furicha), furrow, is connected with farah, boar. In Sanskrit we find vṛ*i*ka, the name for wolf, used in the sense of plough; but this may be due to a radical metaphor, vṛ*i*ka being derived from vraśk, to tear.

In many languages the living principle within us is called spirit (breath); to die is expressed by to wither, to scheme by to spin, a doubt by a knot, kind by warm, unkind by cold, etc.

All this I call poetical metaphor, and it interested me as being a most important element in the growth of language and mythology. What we generally call metaphors, and what Dr. Brinkmann is chiefly concerned with, are no doubt poetical too, and perhaps, if poetical means what is done by professed poets, even more truly poetical than what I call so. But they belong to a later stratum of language and thought. If I call a man a lion, in the sense of dandy; or a dog, in the sense of a wretch, these are incarnate metaphors, and their study belongs to the science of language. But if I say 'he was like a lion in fight,' or 'he was a lion in fight,' if I call him 'Cœur de lion,' these are individual metaphors, and their study belongs to rhetoric. It may sometimes be difficult to draw a sharp line between the two, but that is due to the very nature of metaphors. Though all originally

[1] O. Schrader, Sprachvergleichung, p. 365.

the work of individuals, their acceptance and popularity depend on the taste of others; and it is often, therefore, a mere question of time whether they become incorporated in the spoken language or remain outside. Frequently a modern poet does but revive the latent metaphors of language, or furbish them up till they show once more their original intentions. If we say 'to plough the sea,' in French, sillonner la mer, in Italian, solcare il mare, in Spanish, arar la mar, in Latin, perarare aquas, sulcare vada carina, we only repeat the old radical metaphor which gave to the root AR the meanings of stirring, ploughing, and rowing[1]. Frequently a modern metaphor fades and hardens so quickly that we forget that it ever was a metaphor. Who thinks of a steel-pen as a feather, or of shares, when they rise and fall, as portions of capital? Yet these are metaphors of very modern date.

But though for the purposes which I had chiefly in view when treating of the origin of mythology, the division of metaphors into radical and poetical, as explained by myself, seemed most convenient, a more detailed classification of metaphors may be useful for studying some deeper and wider strata in the growth of human thought and language.

The oldest division of metaphors dates from the time of Aristotle.

He (Poetica, cap. 21) takes μεταφορά in a very wide sense, calling by that name every transference of a word, 1st, from the genus to the species, as

[1] Lectures on the Science of Language, vol. i. p. 296.

if we say, 'to stand' of a ship, instead of 'being at anchor;' 2nd, from the species to the genus, if we say a 'thousand,' instead of 'many;' 3rd, from one species to another species, if we say χαλκῷ ἀπὸ ψυχὴν ἀρύσας, 'with the weapon lifting the soul as water with a pitcher from the well,' or τεμὼν ἀτειρεῖ χαλκῷ, 'cutting with the unyielding weapon,' for in both cases the special ἀρύειν and τέμνειν are used in the sense of taking away; and 4th, according to analogy. Aristotle gives here as an instance 'the goblet of Ares:' and he adds, 'as the goblet stands to Dionysos in the same relation as the shield to Ares, the former is used for the latter.' Another instance is, if we call the evening the old age of the day, or old age the evening of life. It was this last transference, however, that, 'according to analogy,' which in later times monopolised the name of metaphora,—Berkeley (vol. i. p. 390) uses analogy as synonymous with metaphor,—while tropus was used in the more general sense which Aristotle had assigned to metaphora. Thus Quintilian (Instit. Orat. viii. 6), rendering metaphora by translatio, explains it by brevior similitudo, an abridged comparison; and this has remained for centuries the recognised definition of the term. By similitudo Quintilian means such expressions as when we say that a man acted like a lion, by metaphora when we say more briefly the man is a lion. In addition to these he admits two other kinds of trope, viz. the synecdoche and metonymy. When we are meant to understand the many from the one, the whole from the part, the genus from the species, the result from the antecedents, and vice versâ, that with him is synecdoche; when we put one

name for another, such as Homer for Homer's poems, that is metonymy.

This classification has answered its object very well, particularly as it was intended chiefly for rhetorical purposes. But as we acquire a fuller understanding of certain processes of the mind and language, it often happens that the old classifications and the old technical terms prove inadequate, and that we have nevertheless to retain them, though in a modified sense. Thus the name of metaphor is certainly objectionable, except when we restrict it to individual poetical metaphors, because it seems to imply a conscious transference of a name from one object to another, both previously known, both previously named. Such transference takes place both in modern and ancient writers, as when, for instance, Gibbon says, 'Some seeds of knowledge might be cast upon a fruitful soil!' Such a metaphor is poetical and intentional. This is already less so in a passage quoted by Aristotle in his Poetica (cap. 21), when the sun is spoken of as *σπείρων θεοκτίσταν φλόγα*, 'sowing the divine light!' For, as Aristotle hints himself, the metaphor here is not quite involuntary, because the Greek language had no separate verb to express the act of strewing or scattering the light, and nothing remained but to use *σπείρειν*, to sow.

This is a very important remark, and a closer examination of ancient metaphors teaches us that poverty of language was a very important, nay, the most important element in their formation. Language had need of metaphors, had in fact to borrow, because it was too poor, or, as Cicero says (De Orat. iii. 38–39), 'hae translationes quasi mutua-

tiones sunt, cum quod non habeas, aliunde sumas.' He distinguishes these metaphors from others, which he calls 'paulo audaciores, quae non inopiam indicant, sed orationi splendoris aliquid arcessunt.'

When there was no word to express a nascent idea, what could be done but to take the next best? Man was driven to speak metaphorically, whether he liked it or not. It was not because he could not restrain his poetical imagination, but rather because he had to strain it to the very utmost, in order to find expression for the ever-increasing wants of his mind. Suppose man had advanced as far as platting or weaving; it would be very natural that, after setting lines to catch birds, he should, when he had to describe his day's work, be reminded of the words for platting or weaving. Weaving would thus take the sense of putting snares, and when a new word was wanted for setting snares—that is, for tricking, cheating, luring, inveigling a person by false words—nothing, again, would have been more natural than to take a word of a similar import, and to use, for instance, ὑφαίνειν, to weave, in the sense of plotting. Thus Homer says, πυκινὸν δόλον ὑφαίνειν, μῆτιν ὑφαίνειν, etc., i. e. to weave a plot. This metaphor spread very widely, and we may discover it likewise in Sk. várpas, a scheme, as compared with Lith. werpù, to spin, in French trame, from Lat. trama, weft, and even in our own word subtle, Lat. subtilis, which comes from subtexere, to weave beneath, like têla for texla.

Metaphor, therefore, ought no longer to be understood as simply the premeditated act of a poet, as a conscious transference of a word from one object

to another. This is modern, fanciful, individual metaphor, while the old metaphor was much more frequently a matter of necessity, and in most cases not so much the transference of a word from one concept to another, as the creation or determination of a new concept by means of an old name. A poet who transfers the name of tear to the dew has already clear names and concepts both for tear and dew. But the old framers of language who for the first time used 'to weave' in the sense of plotting had before this neither concept nor name for plotting; they created or fixed the new concept and widened the old name at one and the same time.

But though it would be more correct to call ancient metaphors transformations or transitions rather than transferences, it will be necessary to retain the old technical term, only guarding against its etymological meaning being taken for its real definition. After these preliminary remarks, a classification of ancient metaphors will become less difficult.

Fundamental Metaphor.

There is first of all a whole class of metaphors, which I discussed before, and which, as I tried to show, arise from a deep necessity of thought. Of these I have often spoken, and need not dwell on them now, particularly as they have lately been discussed with great philosophical insight by Professor Noiré in his Logos, pp. 258 seq. There was really no way of conceiving or naming anything objective except after the similitude of the subjective, or of ourselves. Not only animals must be conceived as acting like ourselves, as pointing, retrieving, rejoicing, grieving, willing, or resisting, but all inanimate objects had

to be interpreted in the same way. The sun rises and sets, the moon grows and wanes, the clouds fly, the river runs, the mountains stand, the trees die, the sea smiles. Homer calls even a lance furious (*μαιμώωσα*), and a stone shameless (*ἀναιδής*). This fundamental metaphor, however, dates back so far in the growth of our thoughts and words that it is hardly ever felt as a metaphor. It is at the root of all mythology, and had been perceived as such long ago, before the science of comparative mythology was even dreamt of. Thus Reid[1] wrote:—'Our first thoughts seem to be that the objects in which we perceive motion have understanding and power as we have. "Savages," says the Abbé Raynal, "wherever they see motion which they cannot account for, there they suppose a soul." All men may be considered as savages in this respect, until they are capable of instruction and using their faculties in a more perfect manner than savages do. The Abbé Raynal's observation is sufficiently confirmed both from fact and from the structure of all languages. Ruder nations do really believe sun, moon, and stars, earth, sea, and air, fountains and lakes, to have understanding and active power. To pay homage to them, and implore their favour, is a kind of idolatry natural to savages. All languages carry in their structure the marks of their being formed when this belief prevailed.' With certain limitations this is quite true, but mythology is but one out of many manifestations in which that fundamental metaphor shows itself.

[1] Essays on the Active Powers, Essay iv, c. 3, as quoted by Mill, Logic, iii. 5, 2.

There is a second class of metaphors, arising, it would seem, from an imperfection of grammar rather than from any necessity of thought, though on closer examination we should probably find that here, too, language and thought are inseparable. The fact is that certain derivative suffixes have more than one meaning; but this is due in the beginning to an ambiguity both of thought and expression, while afterwards this ambiguity, which was at first intended, became traditional and purely formal. Thus we find that in many languages agent and instrument are expressed by the same word, possibly because at first the instrument was conceived as a kind of agent, afterwards, however, from a mere habit. A borer may mean a man who bores or the instrument which bores. In Greek ἀορτήρ, lifter, applied to the horses which were not yoked to the carriage, was also applied to a strap; κρατήρ, originally a mixer, was used for a mixing vessel, became afterwards the name of any cup-shaped hollow, and lastly the name of the crater of a volcano. Ἐνδυτήρ was used as the name of a garment (πέπλος) to be put on, just as we say in German ein Überzieher, a great-coat. Grammatical Metaphor.

Act and result are constantly expressed by the same word, as we saw in perception and intuition, when used in the sense of what is perceived and seen. This has often become a mere matter of idiom, as when we now use relations for relatives, action for act, nationalities for peoples, even essences for extracts, entities for beings, nay, real existences for subjects[1]. Substantia, sub-

[1] Mill, Logic, i. 3, 2; i. 4, 1.

stance, originally the most abstract of abstract terms, has now become apparently so concrete that Dr. Whewell thought we ought not to speak of imponderable substances, but of imponderable agencies[1].

Sometimes the name of the instrument is used where the act is implied, as when we say brain, or φρένες, midrif, for thinking, heart for feeling. Sometimes the name of the instrument is made to convey the effect produced by it, as when the Greek word χαρακτήρ, an instrument for graving, is used for the mark produced by it, then for any mark, and lastly for the peculiar nature or character of a man.

The name of the place sometimes expresses the agents located in such places, as when we speak of the Court migrating, or the Porte issuing a firman, of Oxford presenting a petition, or of the Church holding a Council.

This subject has been most carefully worked out by Hindu grammarians when treating of the meaning of suffixes (verbal and nominal), and on the various meanings which they impart to roots. It may be doubted whether these cases fall properly under the head of metaphor, but if they do, they have clearly become involuntary transitions of conception, facilitated by the ambiguities of suffixes rather than by any poetical effort, in the usual sense of the word.

We now proceed to the consideration of what is most commonly called metaphor. I explained this process formerly[2] as 'a transference of a name from

[1] Whewell, Philosophy of Discovery, p. 331; Mill, Logic, iii. 14, 6.

[2] Lectures on the Science of Language, ii. p. 385.

the object to which it properly belongs to other objects which strike the mind as in some way or other participating in the peculiarities of the first object.' This definition has been accepted by Dr. Brinkmann and others, but a repeated consideration of the subject has led me to take a different view of the mental process which produced metaphor in the earliest stages of language and thought.

Metaphor as the Result of Generalisation and Abstraction.

If the ruler of a country was called a gubernator, it was not, I believe, by a straight transference of the concept of steersman to that of a ruler of a state. That may be the process by which a poet speaks of a king as a steersman standing at the helm of a vessel tossed by storms. But a simpler process is that by which the mind, after having formed such a word as gubernator, steersman, drops one after another the minute points which constitute its intension or comprehension, and thereby retains only the more general concept of a ruler. That process is not necessarily conscious. It is not aphaeresis, or abstraction, in the usual sense of that word. No one at least, I believe, has ever caught himself in that process of plucking the feathers out of his concepts. It is rather an apoptôsis, a falling off, a moulting, or, as Hobbes would have called it [1], a decay of sense, which leaves behind more and more vague, more and more abstract, more and more general ideas.

When that process had taken place, when gubernator in the language of sailors and others had

[1] Hume, Treatise on Human Nature, ed. Green and Grose, vol. i. p. 183.

dwindled down to a mere director, no actual transference was necessary. Gubernator had been so far emptied of its original contents, its intension had shrivelled up so much, that it was naturally applicable to ever so many persons, provided they acted a leading part in the management of any affairs.

If we speak of the moons of Jupiter, moon is no longer our measurer of time, but it has faded into a mere satellite, a companion of a planet. It has become a very general name, and, as such, it proved applicable to the satellites of Jupiter or of any other planet.

A foot had originally a very full intention. It meant the member of a living body, made of flesh and bone and muscle, with five toes, and used for locomotion. It was meant for a human foot, and implied very soon a certain length. But many of its attributes not being attended to, foot became applicable to the locomotive organs of other animals, of quadrupeds, insects, birds, till at last it lost even the attribute of locomotion, retaining only the meaning of what we stand on, and thus was used as the foot of a table, or the foot of a mountain, signifying what is most lifeless and motionless.

And here again we see very clearly how language and thought march hand in hand. It was not that man did not know by what is called sensuous knowledge the foot of a table, or the foot of a mountain before he gave it a name. The carpenter who made the foot knew it as a piece of wood, as a stick, as properly shaped, whether square or round. But until he conceived it as something supporting the top of a table, as a foot supports the body, he did not know it as a foot, and it is impossible to say

which came first, concept or name, in what must have been an almost simultaneous process.

A poet, no doubt, might dispense with this slow process of Aphaeresis or Apoptôsis; he might not wait for the gradual dropping off of claws and wings and feathers before he called the sun a golden bird. But with the majority of mankind metaphor is produced by the gradual fading of the colours of our percepts, and even by the vanishing of the outlines of their shadows, i. e. of our concepts. This gives us abstract, hence general names, and these general names, without any metaphorical effort, become applicable to a large number of new objects, and are afterwards called metaphors.

How quickly language, even in modern times, can generalise, we see in a number of idiomatic and proverbial expressions in which one single case is used to convey wide inferences and very general lessons. The Spanish language is particularly rich in such proverbs and metaphors, and they have been carefully collected by Spanish scholars. The Dictionary of the Spanish Academy (Madrid, 1726–39) is well known for its wealth of metaphorical expressions, most of which are carefully and successfully explained. The number of Spanish proverbs is said to amount to no less than twenty-four thousand[1]. Instead of saying, 'What service have you rendered

[1] A very full account of the literature on Spanish proverbs and on proverbs in general is to be found in Dr. Haller's great work, 'Altspanische Sprichwörter aus den Zeiten vor Cervantes, ins Deutsche übersetzt, in Spanischer und Deutscher Sprache erörtert und verglichen mit den entsprechenden der alten Griechen und Römer, der Lateiner der spätern Zeiten, der sämmtlichen germanischen und romanischen Völker,' Regensburg, 1883, 2 vols. See also Brinkmann, 'Die Metaphern,' p. 131.

me?' the Spaniard says, Qué hijo me has sacado de pila? 'Which son have you taken for me from the font?' Instead of saying Why? he may say, Por qué carga de agua? 'For what load of water?' When we say, 'Tell this story to another person,' he says, 'A otro perro con eso hueso,' 'Go to another dog with that bone.' The Spanish language abounds in similar expressions which in one sense may all be called metaphorical, because they are all based on rapid generalisations of single cases. But English also, particularly if we explore its dialects, abounds in metaphorical proverbs. In Shropshire, instead of saying 'Something has happened,' the people say 'The cat has kittened.' For instance, 'And so it happened as the landlord sent for him at once. Afore he went says he to me, "The cat's kittened somewhere." And so it turned out, for when he got to the Hall he found as they wanted him to stay on an' not leave the farm, and they offered to drop the rent a bit[1].'

In the same county, if a person appears in a new suit, people say, 'Eh, what a tail our cat's got!' and if lovers who have quarrelled make it up again, it is called 'to warm up cold broth.'

In order to gain a clearer view of the nature of poetical metaphors and their wide influence on the growth of language and thought, I have endeavoured to class them under the following heads:—

1. Transition from Man to Animal.
2. Transition from Animal to Man.
3. Transition from Material to Immaterial.

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[1] Shropshire Shreds and Patches, 9 Jan. 1884; Shropshire Folk-lore, by Ch. S. Burne, 1886, p. 596.

4. Transition from Immaterial to Material.
5. Transition from the Sign to what is Signified.
6. Transition from Cause to Effect.
7. Transition from Effect to Cause.
8. Transition from Part to Whole.
9. Transition from one to another of things generally associated.

To a great extent the metaphors of this class would have to be treated as the result of what I called 'Fundamental Metaphor.' It was impossible, as we saw, to conceive the acts of animals except as analogous with the acts of men. We interpret them from our point of view, and express them in our own language. Hence it is that dogs are not only conceived as hungry and thirsty, as watchful and revengeful, as we are, but that we do not hesitate to speak of them as considering, hesitating, guessing, reasoning, for all we know, syllogising[1], because language could not possibly supply new names to acts in all appearance so like our own, though it may be at the same time so different from them as will is from impulse. But we go further. We speak of hands instead of paws; we speak of the spectacles of a certain goose, of the coat of a dog instead of his fur. In fact the whole animal world has been conceived as a copy of our own. And not only the animal world, but the whole of nature, was liable to be conceived and named by an assimilation to human nature. When people saw a whirlpool in which the water turned and disappeared, they might call it a vort-ex, from verto, to turn. But they might also think of the jaws or the gullet, and thus call it gurges or vorago. Having ap-

1. Transition from Man to Animal.

[1] Plato speaks of τὸ πάθος αὐτοῦ τῆς φύσεως ἀγαθῶς φιλόσοφον.

plied gurges to a whirlpool, they would prefer another derivative, such as gurgulio or the simple gula, for gullet. But the root is the same, and, strange as it seems, there is nothing onomatopœic either in vorago or in gurgulio or in gargling. They all come from the root GAR, to swallow, which gives us girati and gilati in Sanskrit, vorare for gvorare in Latin, βιβρώσκειν in Greek. We then get intensive forms, such as *ge*-gil-yate in Sanskrit, γέργερος, gullet, γαργαρίζειν, to gargle, gurgulio, gullet, in Latin, and in O. H. G. querchela, gullet.

2. Transition from Animal to Man.

But if early language conceived animals in the likeness of man, it very soon conceived man in the likeness of animals. There is hardly a name of an animal which, whether for good or for evil, has not been applied to man and woman. Dog, cur, hound, whelp, donkey, pig, mule, bear, sheep, goat, lion, tiger, cat, mouse, owl, wasp, all occur in ancient as well as in modern times as names of dislike or endearment. We are here speaking of those words only which have been absorbed so completely in the stream of language that their independent meaning is no longer perceptible. In adulari, to flatter, we hardly perceive the original meaning of wheedling[1], nor in wheedling, properly weedling, the German Wedeln, that of wagging the tail. In Fr. câlin, a wheedler, the derivation from caninus or catellinus, if correct, is almost forgotten[2]. Coward, It. codardo, Fr. couard, was originally applied to a dog or any other animal with

[1] Nonius, p. 17: 'Adulatio est blandimentum proprie canum, quod et ad hominem tractum consuetudine est.'

[2] Brinkmann, l. c. p. 227.

his tail between his legs. Canaille in the sense of contemptible people exists in all the Romanic languages, It. canaglia, Sp. canalla, Port. canalha. Though donkey or ass, used in the sense of a stupid person, is a very ancient metaphor, yet it is one that has never quite lost its character of a simile. But when the Spaniards use desasnar in the sense of enlightening or showing a man how foolish he has been, we have here a metaphor that had almost ceased to be felt as such.

In the same manner few Germans when they speak of emsig, diligent, ant-like, think of the Ameise, the ant, i. e. the Emse, the emmet; nay, I see that the derivation is by some considered doubtful. Yet no one doubts that caprice comes from capra, goat, and that capricious was originally meant for goat-like pranks.

The Latin ruminare meant properly to chew the cud, but it was applied so early to the act of mentally revolving a matter, that when we now speak of ruminating we but seldom recall the process in which cows eat their food.

The Greek ἀμέλγειν means to milk, originally to stroke. But when it is used in the sense of gaining, enjoying, the idea of milking is but faintly present. Similarly the Spanish word for milking, ordeñar, lit. to arrange, is afterwards used in the sense of drawing profit from anything (ir logrando poco á poco el fruto de alguna cosa). The German word taugen, to be good for something, may be connected with duh, to milk. Duh signifies not only to milk, but also to yield milk. A cow which gavé milk (une vache qui rend) would have meant a useful cow, just as an animal which ceased to have

young was called effetus, effete, useless. Duh, therefore, from meaning to yield milk, might well have come to be used in the general sense of being useful and efficient. The German Tugend would thus have as truly an agricultural origin as daughter, Sk. duhitar, if that word meant originally the milkmaid[1].

All this shows how language, if at first it interpreted animal by man, soon reversed the process and interpreted man by animal, a phase of thought which not unlikely may have given birth to those numerous animal myths and animal fables, nay, to those curious animal epics which formed the delight of our distant ancestors and the remnants of which have survived to the present day.

3. Transition from Material to Immaterial.

The very general change from a material to an immaterial meaning has been so often dwelt on that I need here say no more than what is recognised by all students of language, namely, that every word, without a single exception, which has an immaterial meaning had originally a material meaning. Materialist and Idealist philosophers, Locke as well as Berkeley, are agreed on this point[2]. Still the process of dematerialising varies considerably. In the case of angel, which meant originally a human messenger, a real transference seems to have taken place, when a name had suddenly to be found for those spiritual messengers who were supposed to convey the commands of God

[1] See Grassmann, in Kuhn's Zeitschrift, xii. p. 126, where the Goth. dauh-t-s, feast, δοχή, is likewise traced back to duh.

[2] See Locke, Human Understanding, iv. 3, 6; Berkeley, Third Dialogue between Hylas and Philonous, Works, i. p. 347; Lectures on the Science of Language, ii. p. 374.

to men. Here we may speak of a real transfer. But in the case of spirit, the process was different. Spirit was originally the visible breath, but it was soon taken as a merely outward sign of that which invariably ceased when breath ceased. It then came to mean life, and, by a further step, the living principle, the invisible spirit of man, and at last any spirit or spiritual being which was believed in without being seen. There was here no real transference. The concepts of life, the living principle, the invisible spirit of man, all these were not concepts, first formed and then named, but simultaneously with the enlargement of the concept of spirit, the name itself was enlarged. The birth of each new concept was synchronous with its baptism.

It is difficult to select instances of metaphor leading from material to immaterial things, because language is really a complete herbarium of faded metaphors. We find them in the languages of uncivilised as well as civilised nations, only that in the former the material meaning may continue to be felt much more than in the latter. In New Guinea a man who pities you, says that he has a very bad stomach-ache for you[1], and he no doubt means much more than we do when we speak of the bowels of compassion.

The Roman peasant preferred to say silva, forest, or cumulus, heap, instead of multitudo, and Latin has retained such phrases as beneficiorum cumulus, magna exemplorum silva[2]. Spicilegium, a gleaning of ears, was not used metaphorically in

[1] Rev. W. G. Lawes, Motu Grammar, 1885, Introduction, p. x.

[2] Brinkmann, l. c. p. 129; Reisig, Lateinische Sprachwissenschaft, § 173.

classical Latin, but it has become a favourite name for selections in later times.

Rustics spoke of rain and rivers as flowing and trickling forth (manare, emanare); soon the words were used by Roman orators in the sense of emanating from, as in Cic. De Or. i. 42, 189, hinc haec recentior Academia emanavit[1], 'hence arose this more recent Academy.' Imbuere, in the language of the village, meant to moisten, in Rome it came to mean to infect, to imbue, to inspire.

As to adjectival metaphors, we speak of thrilling and stinging words, of a hard and a soft heart, a heavy and a light heart, a warm and a cold heart, a broken heart and a broken spirit, of black ingratitude, dark care, brilliant thoughts, golden times, narrow prejudices, iron will, dry remarks. As to verbal metaphors, we have such expressions as to damp the ardour, to chain the passions, to drown the cares, to feed on hopes, to thirst for knowledge, etc.

Even adverbs often rest on metaphors preceded by a fading of colour. Thus aegre comes from aeger, sick, as hardly from hard. Temere, at random, is supposed to be a locative of a lost temus, corresponding to Sanskrit tamas, darkness, so that originally it would have meant 'in the dark.' Mox, soon, seems to correspond to Sk. makshu, with might. In Greek, δεινῶς is used in the sense of very, without that taint of vulgarity which still clings to our 'awfully.' The German ungefähr, about, meant originally 'without danger.' Vielleicht was very easily, Greek τάχα, perhaps. Schon, already, is

[1] Brinkmann, l. c. p. 76. Förstemann, Zur Bedeutungslehre der deutschen Adverbien, in 'Neues Jahrbuch der Berliner Gesellschaft für deutsche Sprache, herausgegeben von v. d. Hagen,' vol. vi. pp. 44–51.

supposed to have sprung from schön, beautifully, used in the sense of perfectly. A similar idiom is found in the Italian bello e buono, or in the English, 'he is gone for good.'

That all prepositions may change their local and temporal into a causal meaning has been often remarked, and may be seen explained in every Greek or Latin Grammar.

In most of the cases hitherto mentioned it would be impossible to describe the change of meaning as due to metaphor or transference in the ordinary sense of the word. The change takes place, whether we like it or not. The original meaning of words fades, their full intension becomes lessened, their extension in consequence grows larger and larger, and without any stretch of imagination the words thus changed come to express concepts which seem to have grown up simultaneously with this process of decay.

There are other cases where we see the name of one material thing used as the name of another, owing to some kind of similarity which it is not always easy to discover. Thus the French tête, head, is evidently the Latin testa, but testa in Latin meant a brick, an earthen pot, and a potsherd. In Spanish casco means potsherd and skull, and cogote, occiput, is said to be derived from concha, shell. In German we have the expression 'ganz aus dem Häuschen sein,' to be very much excited, almost off his head. In Spanish casilla, small house, is used for head, and socar á uno de sus casillas means to drive one out of his little house, i.e. to make him impatient. Humorously the head is called 'la tapa de los sesos,' the lid of the senses[1].

[1] Brinkmann, l. c. p. 135.

4. Transition from Immaterial to Material.

It happens likewise, though of course less frequently, that names applied to immaterial objects are used again with a material meaning. Thus soul, after having become the name of the spiritual element in man, is employed in the sense of a human being, as when we say, 'I did not see a single soul there.' Ghost and spirit, after conveying the meaning of something invisible and intangible, are often used in the sense of apparitions that can be seen and even touched. Nothing can be more abstract than essentia, the essence of things, but it is boldly transferred to perfumes, extracted from flowers and other substances, and we even hear of essential oils. At first thought in its swiftness is compared to a horse, but as early as the Veda we read of horses quick as thought.

5. Transition from the Sign to what is Signified.

Another class of metaphors is not always distinguishable from the preceding one, because the sign is naturally in many cases the material outside of an immaterial inside. Thus spirit, as we saw, stood for the living, and even for the thinking principle in man. That may be called the material for the immaterial. But spirit or breath may also be considered as the outward sign of life or thought, and the metaphor would then belong to the fifth class. The same applies to such words as brain, heart, stomach, when used to signify thought, feeling, and passion; also to frons and supercilium, forehead and eyebrow, if used in the sense of boldness and pride. Other cases more clearly belonging to this class are when we say 'the crown commands,' meaning the 'Queen.' With respect to adjectives, when we speak of a mean as

a dirty action, we use dirt as the outward sign of moral degradation. When we say 'the trumpet calls,' we really mean the command of the general as conveyed by the sound of the trumpet that calls the soldiers to battle. At last we may speak of the trumpet-call of duty.

Cases where the name of the cause, whether as author or as instrument, is used in place of the name of the effect, are frequent, as when we speak of reading Homer, instead of reading the poems made by Homer. This by some authorities would be classed as Metonymy. We have nearly the same kind of metaphor in the use which the Romans made of Ceres and Bacchus, in the sense of bread, wine. In Greek we found χαρακτήρ, the instrument for marking, used for the mark produced by it; in Latin lingua, tongue, has become the recognised name for language.

6. Transition from Cause to Effect.

The next class is not very numerous. When we say that a man ought to blush, meaning that he ought to be ashamed, we use, no doubt, the effect for the cause; but blush may also have been taken as the outward sign, used in the sense of what is signified by it. 'Give me a light,' if used for 'Give me a candle,' may be another case in point, but these instances are perhaps hardly sufficient to form a class.

7. Transition from Effect to Cause.

Another class, to which the Greeks gave the special name of Synecdoche, comprises such cases as when we use roof in the sense of house, bread for food, spring for year. Often the opposite takes place, as when people speak of a resolution passed by the senate, though it may have been passed by a few senators only, or by the

8. Transition from Part to Whole.

majority of the senate; or when people speak of the church, meaning themselves only and those who agree with them. This, however, may rather be called an abuse of language or even an untruth than a metaphor.

9. Transition from one to another of things generally associated.

Metaphors by which the name of one thing is transferred to another which forms its complement or constant accompaniment are frequent in all languages. Thus scales stand for balance, the clouds for the sky, the altar for the temple. People say they have drunk a bottle, when they mean the wine in the bottle, and highwaymen asked for 'la vie ou la bourse,' when they cared very little about the purse, but a great deal about the money in it. Money, moneta, German münze, was so called because at Rome money was coined in a building on the Capitol, adjoining the temple of Juno Moneta.

After having discovered how little of real transference there is in what we call metaphorical expressions, it might become a question whether the old name should be retained, or whether it is so misleading that it ought to be abolished and replaced by a more accurate term. There are, no doubt, real metaphors, as when the sun is called the jewel of the sky, or the sea a garden of spray (un jardin de espumas), or England,

> 'A precious stone set in the silver sea,
> Which serves it in the office of a wall,
> Or as a moat defensive to a house,
> Against the envy of less happier lands.'

Some of these metaphors are far-fetched, while others are within easy reach, but all are fetched, and are well described therefore by metaphora. Most

of the metaphors, however, which are of interest to the student of language and thought, as having entered into the living body of speech, as having become, as Dr. Brinkmann expresses it, incarnate, owe their origin, as we saw, to such different causes that metaphor as applied to them has certainly become a misnomer. If, nevertheless, I continue to use metaphor as the technical name for all, it is with the distinct understanding that metaphor must not be supposed to imply a conscious transference of the name of one thing to another. 'A fair and ingenuous reader,' as Berkeley says[1], 'must collect the sense from the scope and tenor and connection of a discourse, making allowance for those inaccurate modes of speech which use has made inevitable.' To imagine in the earliest periods of language a real transference of name from a known thing to an unknown would be contrary to one of the leading principles of the Sciences of Thought and Language, namely, that nothing can be a thing to us without a name. The act of clothing naked concepts with old garments is an act of charity which we never perform. What really happens is that names vary in intension. Percepts do not hold all the sensations which originally composed them, concepts do not retain all the percepts which at first they were meant to embrace. There is therefore a constant change going on in the meaning of words, and our mind, if we but watch it carefully, is the permanent scene of the most surprising transformations. As the concepts lose their full intension—and this all concepts are apt to do by themselves and without any assistance derived from

[1] Berkeley, Works, i. p. 183.

what we call abstraction—their names become larger, i. e. become applicable to new germinal concepts which are but waiting for a name to spring into life. When we once have the concept and name of a steersman, the concept of director springs into life as soon as steersman loses the attributes of standing at the helm of a ship and managing the rudder. The picture has faded, and by thus fading the weather-beaten steersman has become like many other people who are now, by likeness, κατὰ τὸ ἀνάλογον, called steersmen, gubernatores or governors. In the highest sense, therefore, metaphor is but a new side of abstraction and generalisation, the vital principles of all thought and of all language.

The principal task which the Science of Thought has to fulfil might thus seem to be accomplished. We have seen what Thought really is, and that in its full reality it exists nowhere but in Language. This places all philosophy on a new basis, and on a basis that is not likely to be shaken again by the old arguments that as speech may be thoughtless, thought may be speechless, or that we think first, and then speak. That 'thinking first' is nothing but silent language, a language which anybody can perceive, while he is writing a letter, without for one moment allowing himself to utter the words which his hand and his pen busily transfer to the paper before him. We may, if we like, distinguish the written from the spoken, the spoken from the thought word, but none of these is capable of separate existence, neither the written, nor the spoken, nor the thought word.

I know from experience how difficult it is to give up our belief in mere thought, and I shall not be surprised if such a surrender were considered as an abdica-

tion of the highest dignity of human nature. And yet there is in reality no surrender and no abdication; all that is wanted is that we should recognise the facts which we cannot seriously deny, and that we should always recollect that notio and nomen are two names of the same thing.

Still as there are men who can never speak any language beside their own, and as there are philosophers who can never understand any dialect beside the one in which they have been brought up, be it that of Hume or that of Kant, I am quite prepared to find that to some thinkers a system of philosophy based on the absolute identity of language and thought will for ever remain a complete puzzle. They have brought themselves to believe in what they call mere words, and they cannot therefore give up their belief in mere thought.

And yet, with few exceptions, as we saw, all earnest thinkers, all leading philosophers, whether they liked it or not, have had to confess that language and thought are inseparable, though few, if any, have seen what follows from that confession.

What really follows from it I have tried to show, namely, that language is the true autobiography of the human mind, and that all and every secret of philosophy is to be studied in the world-old diary of language. If we fully understood the whole growth of every word, philosophy would have and could have no longer any secrets. It would cease to exist. But although that point has not yet been reached, and will not be reached till several more generations of scholars and philosophers have toiled to reach it, some advance has already been made, and the results which the Science of Language has obtained may

safely be utilised, as I have tried to show, for the Science of Thought.

If the general result of the Science of Language may be said to have been that language, which formerly seemed so wonderful a thing as to require a superhuman framer, is now seen to be a very intelligible and purely human piece of workmanship, the same result has been obtained in the Science of Thought. Thought, which seemed so marvellous, has become the most intelligible, the most simple piece of work. It is, in fact, no more than addition and subtraction, as Hobbes said, no more than perceiving, conceiving, and naming, as I have tried to show.

We asked for nothing to be granted us but the fact that men in their most primitive social state are conscious of the acts which they perform, and that they accompany these acts with certain more or less musical sounds which in time serve to themselves and to others as signs of certain acts. It is not much to ask that MÆR should have been the sound accompanying the grinding of stones, VÅ the song of weavers, KHAN the shout of diggers. Out of such simple materials we saw how roots were framed, how roots were localised or predicated of this or that, how verbal and nominal bases were produced by composition of given elements, whether predicative or demonstrative; how the former were conjugated, the latter declined, till at last all that is now contained in our dictionaries and grammars was elaborated and finished, and nothing remained for poets and philosophers but to add and subtract again the treasures which they had either inherited or acquired in the sweat of their face. It was by adding repeated acts and holding them together in our consciousness that

the first roots were formed, such as MÆR, to grind, VÂ, to weave. It was by subtracting or abstracting that the meaning of these roots became more and more generalised, so that to grind could come to mean to stroke down, to smoothe, to please, and to weave could be used in the sense of composing a poem or a song. It was by combining that plurals were formed, and collective names, and abstract names, in the usual sense of the word; it was by subtracting that a general term was predicated of a less general one. The process is always the same. We combine and we retain what we have combined. We subtract and we retain what we have subtracted. The results of our combination and subtraction supply the materials for new combinations and new subtractions, and thus ad infinitum from the first root to the last word, from the first percept to the last concept. The very first word that was ever uttered was really a proposition, and the last poem of Browning is no more than a series of propositions. There is an uninterrupted continuity between the two, and however powerful the fancy of the poet, however subtle the reasoning of the philosopher, the materials which both have to use are the same, the words derived from roots and collected in the granary of our dictionaries. I do not say that an architect like Michel Angelo was no better than a stone-mason or a brick-maker, yet St. Peter's consists of nothing but stones and bricks, and possibly some cement which is again pulverised stone. Nor do I say that a play of Shakespeare is merely a dictionary well shaken together, but I do say that the materials with which it was built up were taken out of that treasury of words which has been accumulated during many thousands

of years, and which contains no metal, no gold nor silver, except what is found in the 1000 roots of the Aryan language, and in the 121 primitive concepts of Aryan thought.

Here then I might put down my pen, having performed the promise which I gave in the beginning of my book. If I add another chapter, it is in order to show that a philosophy based on the identity of language and thought will stand any test that may be applied to it. I shall therefore in the next Chapter treat very shortly of Propositions, the principal part of true Logic. Syllogisms, which are nothing but combinations of propositions, are of small interest in the natural growth of thought. They are useful as gymnastics, but on the real battle-field of thought they are unserviceable weapons.

CHAPTER IX.

PROPOSITIONS AND SYLLOGISMS.

In the first Chapter of this work I pointed out the uselessness of what I called Nursery Psychology. A study of that psychology may be useful, however, for at least one purpose, namely to bring out clearly the difference between the growth of language and thought in ourselves, as children of the nineteenth century, and the growth of language and thought in the beginning of all things. It will teach us that to transfer the observations which we make in our nursery to the earliest period in the growth of the human mind would be like looking for bricks and stucco in the lowest strata of granite. It may be that the materials out of which brick and stucco are made go back to the earliest geological periods in the formation of the earth, but even then clay, baked by geological heat, is very different from terra cotta.

How children learn words.

If we watch the process by which children begin to speak and to think, we see that they begin at once with ready-made words, with what we may call the most finished terra cotta. 'Names with them are,' as Professor Bain says, and from his point of view, quite rightly, 'impressions of sense.' One person is pointed out to a child as 'Mother,' another as 'Father,' a third as 'Brother,' and 'Sister,' and these names remain in the memory as among the earliest

and most lasting impressions. Every one of these terms is, as we know, thousands of years old, and has passed through a long history of its own. But to a child Mother is a mere sign, almost a proper name. 'Mother has said so' implies at first no more than 'Mary has said so.' Gradually, however, with the growing experience of the child one attribute after another is slipt into the word, and thus what was at first a mere proper name becomes full of meaning, or, as logicians say, intension. It takes in one after another, both the visible attributes of a mother, referring to her dress, her eyes, her hair, and the invisible attributes, such as kindness, severity, and wisdom. Much later the more characteristic attributes of woman (mulier), wife (conjux), and mother (genitrix) are added, and only after all this congeries of attributes has been gathered under the name of mother does the work of definition and classification begin by which the few who think systematically assign to this and all other names their well-defined place in the universe of knowledge.

How names were first framed.

Now let us consider once more the process by which such a name as Brother was first framed. We can quite imagine a state of society in which the concept and name of brother did not yet exist, and we can infer from the various names of brother that they were not framed after a clear concept of brother had been gained, but at a haphazard, from some attribute or other which seemed important at the time to the members of a primitive society. Suppose that bhrâtar meant originally no more than one who helps to carry (from BHAR, to bear), an

attribute, which to us seems extrinsic and non-essential, would then have supplied the first germ of this name. From the very first, however, this name which meant carriers and helpers might be said to have implied every other attribute that was inseparable from these carriers. A bhrâtar or frater would have implied the outward appearance of a man, as distinguished from a woman; it would probably at first have implied a certain age also at which boys began to be helpful. The larger the number of attributes thus consciously included (the intension), the smaller would become the number of individuals to which the name was applicable (the extension). Sometimes one of these implied attributes might supply a new name. In a polyandrous state of society, for instance, particularly when questions of inheritance arose, it would become of importance to distinguish brothers of the same mother, though of different fathers. A brother of the same mother might be called bhrâtâ sa-garbha*h*, i.e. frater co-uterinus, ἀ-δελφός, and when φράτηρ drifted, as in Greek, into a more special social and political meaning, ἀδελφός would remain as the more useful name, though no longer confined either to children of the same mother, but of different fathers, or to children of different mothers, but of the same father.

Green, on the beginning of knowledge.

This process is well described by T. H. Green, though for a different purpose. 'If we say,' he writes[1], 'that we know things first under a minimum of qualification and afterwards under more, we seem to contradict the fact that knowledge begins with experience of real objects

[1] Works, vol. ii. p. 193.

which, as real, are qualified with infinite complexity.' 'Can you deny (it will be said) that it so begins with experience, or that objects of experience are thus real in the most concrete sense? We answer, it does so begin and the objects are thus real, but only in themselves; for the subject learning to know, they are so only potentially, not actually. For him the beginning of knowledge is merely "there is something," in other words, his first idea is of "mere being;" this something gradually becomes further qualified, as, in virtue of that relation of the ego to the passing feeling which renders it "something," it is held in relation to other experience. Thus "concrete" objects are gradually constituted by a process which is conjointly one of synthesis and analysis.'

The earliest names must from the beginning have been appellative, not proper names, at least not in our sense of that word; their meaning must have been very small and their possible extension in consequence very wide, till new names came in to mutually limit and determine their intension, or definition was resorted to in order to exhaust once for all the whole contents of each name.

Difference between the two processes.

It must be clear how different these two processes are, the one by which a child accepts the word brother, ready made, a mere sign, to him almost a proper name, comprehending all that it has vaguely taken in as his brother, the other by which the early framers of language predicated a special act, say that of carrying and helping, of this or that person, and thus by their own mental effort came in possession of a name which was significant of one attribute, though it

implied, more or less consciously, many other attributes possessed by the same persons to whom the attribute of carrying was ascribed. This shows that the difference between the strata of the earth and the stories of a palace can hardly be greater than that between names formed for the first time by primitive men, and names imitated and stammered forth for the first time by our own children.

All nouns were originally synthetical.

What applies to such a name as frater, applies to all names. All names contained originally a synthesis of a predicate with a subject, the subject being this or that, qualified by a predicate which in the first instance expresses an act, though very soon also a state or a suffering. Every noun contains a synthesis of hoc and illud, or, more correctly, of the first with the third category, of the οὐσία, substance, with the ποιόν, the quale. The difference between a noun and a verb, between 'carrying he' and 'he carries,' was originally that in the noun frater, 'carrying he,' the subject was he, qualified by carrying, while in the verb fero, fers, fert, the act, as continuing in time, was the principal subject of thought and was predicated of me, thee, and him. Both substantives and verbs, however, were in the beginning complete sentences.

Formation of Names.

It must not be supposed that this is a subject of interest to the etymologist only. Etymologies may be right or wrong, but nothing can affect the fact that every name expressed originally a subject, qualified by a predicate. This is very different from the process by which our best logicians suppose names to have been formed. They hold that in order to form a

name we have first of all 'to abstract attributes found in individual things, then to fix such attributes by a name, and lastly to take them as representative of individual things, which, as thus represented, form classes[1].' It is not enough, however, to state that this is done; what has to be explained is, how it is done. When we have a name, no doubt we can take it as representative of individual things, but we cannot take it, unless we have it, or rather unless we make it first.

Palaeontology of the human mind.

The true history of the human mind must therefore be read in the records of language. For studying the development of each individual mind the process by which each child adopts words and gradually fills them with their contents may be of interest, but for studying the development of the human mind from its first beginnings, we must go much further back, and try to discover by what process those words which we at present simply accept, were originally produced. This is the true palaeontology of the human mind, and this alone explains to us, not what might have taken place in the growth of our mind, but what actually took place.

Imperfect beginnings.

It may be said that the first step in the formation of names and concepts is very imperfect. So it is. To predicate 'carrying' of this or that individual is a much more primitive process than to abstract an attribute. To name the act of carrying by a root formed from sounds which accompany the act of carrying a heavy load, is again a far more primitive act than to fix

[1] T. H. Green, Works, vol. ii. p. 167.

an attribute by a name, particularly by a name which has as yet no existence. But these imperfect primitive acts have within them a power of growth. Suppose bhrâtar was originally intended for one who carries and assists, and for no more; it would soon become necessary to limit the sphere of its application or to make it more definite in meaning; and this would be achieved either by determining adjectives, or by the formation of similar words to which other kinds of carrying were assigned. Thus phor-eús, being used in the most general sense of a carrier, would leave phrâ-ter to express the friendly carrier, while phôr, thief, would be the hostile carrier, he who carries away by violence. Another word phorós, meaning originally what carries, was used as an adjective (for all substantives were originally capable of being used as adjectives also), and thus an adjective was obtained, phorós, expressive of carrying, and impetuosity, but also of furthering, nay, of fertility.

Besides these names of the agent, the root PHER would yield us names of what may be called inanimate agents or instruments. Thus phéretron, originally anything that carries or with which we carry, took after a time the special meaning of a bier; pharétra, that of quiver; phor-mós, that of basket for carrying things. Dí-phros, also, a carriage, may have come from the same root.

As names of the result of carrying we find phórtos, phérma, and phórêma, a weight; phóros, tribute, i. e. what is carried to the king; phorá, what is borne by a field, Ertrag; pherné, what is brought in by the wife, dos; lastly phertós, what is carried, what is tolerable, áphertos, what is intolerable.

The mere act of carrying, as implied by the root, is more fully expressed by such derivatives as phórêsis, or by phorâ, which means carrying, impetus, paying of tribute, bearing fruit, and, as a result, proceeds, tribute, etc.

The more names we examine, the stronger grows our conviction that they are all formed on the same principle of a synthesis between a demonstrative element, this or that, here or there, which points to the subject, and a predicative element, i. e. a root. If I say all names, I do not except proper names, for all proper names were originally appellative[1], though the loss of their original appellative meaning may at a later time render them more useful for the purpose of designating individuals.

Adjectives.

Adjectives, too, were originally appellatives, though restricted after a time to an attributive or predicative use. A wise man, 'homo sapiens,' was a man who is also a sage, homo juvenis, a man who is also a youth. In the Aryan languages an outward grammatical distinction between nouns and adjectives was felt to be useful, but it is by no means necessary, and there are many languages in which the distinction is left to collocation only, i. e. to that peculiar mode of predication which the speaker considers least ambiguous.

All adjectives were, as we saw, in the beginning substantives, but, being chiefly used as predicates, they soon formed a grammatical class by themselves. They might, however, be used in a sentence as subjects also, and in that case they became the first so-called abstract nouns. Thus 'the snow is white' was

[1] Pott, Personen-namen, p. 1.

originally meant for 'the snow is the white one,' or is something of which brilliancy has been predicated. When I say 'the snow is white,' white has become the name of an attribute, and predicates something abstract, something that in rerum naturâ cannot exist by itself. But I can again change the attribute white into a subject, and speak of 'the white of the snow,' i.e. that unknown something which makes the snow to appear white, or causes in me the sensation of white. In the Aryan languages it is possible to distinguish by means of grammatical suffixes between 'the white' or 'the album' of white things, and 'whiteness,' 'albedo.' We saw that some logicians tried to distinguish between 'the white,' as it were 'the colouring material' and 'whiteness,' the quality of that material. But when we speak of the white of the snow, we do not mean the colouring material, supposing there is such a thing, but simply whatever causes in us, when we see snow, the sensation of white, whether that be a refracting surface, or a vibration of ether, or anything else. 'The good in man' is the same as 'the goodness of man,' only looked at from a different point of view[1]. It is only the ingrained feeling that two different words must have two different meanings which leads us to imagine that there is some sort of difference between the good in man and the goodness of man. I believe they are two expressions for one and the same thing, though I should look upon goodness as more collective than the good. But if some philosophers

[1] If Mill says (Logic, iv. 3, 4) that 'whiteness and a white thing are only different phrases,' I object to the 'thing' after 'white.' There is a difference between a white thing and that which makes a thing white.

maintain that to them goodness is more abstract than the good, I have nothing to say against them; they must know their own minds best.

Verbs.

If I am right in holding that all attributes are abstract words[1], verbs naturally fall into the same class as adjectives. It makes little or no difference whether I say, Nix est alba, or nix albet, and it is well known that Aristotle speaks of τὸ λευκόν, the white, as a ῥῆμα, a verb, but of τὸ ἄνθρωπος as an ὄνομα, noun. A verb predicates an act, or a state, or a suffering of three persons, I, thou, he, in the singular and plural, and likewise of things, whether it or they. It forms a perfect sentence more clearly even than the noun. If the person or the thing of which an act is predicated is named by itself, we get really two sentences combined in one. 'The brother carries,' stands for 'Carrying-here carry-he.' No doubt this phase of thought has long been forgotten, and we now restrict the name of proposition (πρότασις) to a combination of two originally independent sentences, in which one term is either asserted or denied of the other term, and which therefore convey either a truth or an untruth, according as that combination is either correct or incorrect.

Propositions.

After we have clearly perceived the true character of names, such as it was, not such as it might have been, in the beginning, we shall now better be able to understand the true character of a proposition.

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[1] Mill holds that 'an abstract name is the name of an attribute or combination of attributes, while the corresponding concrete is a name given to things because of, and in order to express, their possessing that attribute or that combination of attributes.' Logic, i. 5, 7.

If, according to their true origin, names can be called the names of concepts only, never of things as apart from our concepts, it follows that propositions also, which consist of combinations of names, are concerned with concepts of things, not with things by themselves, whatever that may mean. A proposition is right or wrong, if it conveys the true relation between two names. Whether those names are right, that is to say, whether their intension has been properly defined and their extension properly limited, is a question that has to be settled in quite a different Court.

Propositions and Judgments.

It might be useful, in order to avoid misunderstandings, to distinguish between propositions and judgments, reserving the latter name for statements of facts, supported by new observations, the former for predications of one name of another, according to their present definition.

Formal Logic, however, has, properly speaking, to deal with the mode of assent only, not with what is assented to. The definition of names is constantly changed, is narrowed or extended by new observations, but it is only after names have thus been defined that they become proper objects for propositions. When it was believed that there were only seven planets, the proposition 'the planets are seven in number' was right. When it was found that the number of planets is greater than seven, the proposition 'the planets are more than seven' was equally right. Nor do I see that we should gain much if we called the latter a judgment, the former a proposition. They are both propositions [1], both right for the time

[1] See, however, Mill, Logic, i. 5, 1, 2.

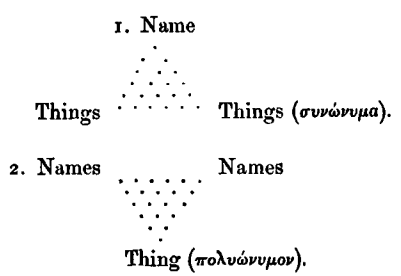
being, and all that logic can teach us is that both propositions could not be right at the same time.

Synonyma and Polyonyma.

A name, as we saw, originated with a sound accompanying an act, and this sound was meant to express the consciousness of a repeated act, this consciousness being the same thing as a concept, embodied in a root. By predicating these conceptual roots of this or that, the earliest framers of our words and thoughts arrived at names denoting single objects by one attribute, but being applicable to an indefinite number of similar objects. By usage, however, by the creation of cognate words, or by the adoption of distinguishing attributes, the extension of these words could be more and more restricted and defined, until some of them became limited to the narrowest spheres, became in fact singular terms, and, in some cases, proper names. Before names reached that last stage, language and thought would have to pass through various stages in which the same name, being vaguely connotative, might be applied to many widely different things, and in which different names, if sharing one part of their connotation in common, might be applied to one and the same thing.

Digger, for instance, might signify a man, a woman, or a child, nay, even an animal; and, under certain conditions, an instrument also, such as a spade, might be called digger.

On the other hand, names such as Digger, Cutter, Labourer, Servant, Male, Child, might all be meant for the same person, according to different acts, states, or qualities which we notice in him.



What then was the original purpose of a proposition, a sentence consisting at least of two words, of which one is predicated of the other? It was nothing but a repetition of that act of predication which in the first instance led to the formation of words. It meant to say, I have called x a, I now call the same x b. The true purpose in forming a name was, as we saw, to predicate a primitive concept, embodied in a root, of this or that thing. Our purpose in forming a proposition is to predicate two names of one and the same thing, signified by either name. In saying 'this man digger,' we predicate digger of this man, or we predicate both manhood and digging of one and the same person. Historically this is the only possible way in which propositions could be and were formed.

Purpose of Predication.

The subjects of propositions may be singular, dual, or plural according as we predicate digging of one man, of a couple of men, or of many men. The dual, however, has not always a separate form in grammar. A further step would lead us from many to all, at first by saying 'all men we know are diggers,' and, lastly, by stating that all who deserve the name of man deserve also the name of digger. I use the word

Singular, Dual, Plural and Universal Propositions.

deserve in order to show that the decision whether anything should have such a name or not, depends on the judgment of the original framers of names, or of their later critics. We can never take out of a name more than we have put into it.

This explains in a broad way the historical process by which men arrived at particular (including plural) and at universal (including singular and dual) propositions, and it explains at the same time why the universal proposition which I quoted, 'all men are diggers,' is wrong. It would be right so long as we knew no men who were not diggers; but as soon as we came across a single man who had never dug, the proposition would be wrong, because we should know one person at least to whom the name of man was applicable, but not that of digger, or, in other words, the sphere of man would be larger to us by one than the sphere of diggers. If, however, we say 'all diggers are men,' our proposition can never be contradicted by facts, provided we have made up our mind not to allow the name of digger to anything which does not deserve the name of man. Before we can say that all who deserve the name of digger deserve also the name of man, we have to define the exact denotation of man. If, for instance, man denoted all human beings, no being deserving the name of digger could fail to deserve the name of man. But if man denoted, as it often does, human beings of the male sex only, then we could no longer say that all diggers are men, because we know of women also who are diggers.

Here language has often availed itself of the gender of nouns to make propositions more definite. Gender

is originally genus, and its outward signs mark broad genera of things, and in the end the most useful genera only, those of masculine, feminine, and neuter. We must not imagine that gender was originally intended to mark sex only. That was the result of a much later differentiation. Gender came in by the introduction of a certain class of nouns in which names of women predominated. That made all nouns outside that class not feminine, i. e. masculine. The neuter gender has no existence at all, except in the nominative and accusative. As soon then as a language has fixed three forms for 'digger-he,' 'digger-she,' 'digger-it,' our propositions become at once more narrow and more definite, and we may say 'all digger-he < man-he,' 'all digger-she < man-she.' We can also form propositions of 'digger-it,' i. e. spade, by saying 'all digger-it < cutter-it,' i. e. 'omnia sarcula acuta' or 'omnia sarcula caedunt.'

Classification by Gender.

The so-called Copula on which so much has been written has nothing whatever to do with the nature of a proposition except when it conveys at the same time the modality, i. e. the actuality, possibility, or necessity of a judgment. Whether I say homines boni or homines sunt boni, my meaning is the same, namely homines = boni. All auxiliary verbs are merely the shadows of verbs which originally meant to grow, to dwell, to turn, to breathe [1], and many languages are without them, though they are not without the power of expressing propositions. Hobbes (Leviathan, iv. 46)

Copula.

[1] M. M., Hibbert Lectures, p. 197, and before, p. 384.

saw very clearly on this point, and no more need be said on it.

'Others,' he writes, 'serve to show the consequence or repugnance of one name to another; as when one saith, a man is a body, he intendeth that the name of body is necessarily consequent to the name of man; as being but several names of the same thing, man; which consequence is signified by coupling them together with the word is. And as we use the verb is, so the Latins use their verb est, and the Greeks their ἐστί through all its declensions. Whether all other nations of the world have in their several languages a word that answereth to it, or not, I cannot tell; but I am sure they have no need of it. For the placing of two names in order may serve to signify their consequence, if it were the custom (for custom is it that gives words their force), as well as the words is, or be, or are, and the like.

'And if it were so, that there were a language without any verb answerable to est, or is, or be, yet the men that used it would be not a jot the less capable of inferring, concluding, and of all kind of reasoning than were the Greeks and Latins.'

Proposition as defined by Hobbes.

If now we compare this historical process of the formation of propositions with the description given of it by 'one of the clearest and most consecutive thinkers whom this country or the world has produced' (these are Mill's words), we shall find that Hobbes, though utterly ignorant of the historical antecedents of language, agrees with us in the most remarkable manner. 'In every proposition,' he says, 'what is signified is the belief of the speaker that the predicate is a name of the same thing of which the

subject is the name; and if it really is so, the proposition is true.'

Mill admits that this is 'the only analysis of a proposition which is rigorously true of all propositions without exception.' But he evidently has not seen the full bearing of it, still less its historical justification. He thinks it is entirely true of such propositions only as 'Tully is Cicero,' that is to say of predicates which have no connotation at all, but are what we call proper names. Now these are the very names which, as they connote nothing, are of the smallest interest in forming propositions. They may form the subject, but they can never be the predicate of a true proposition, for in saying 'This is Tully, this is Cicero,' we do not really predicate, but we simply name [1].

Mill's criticism unjust.

But why does Mill imagine that the explanation given by Hobbes is not applicable to any other propositions? He says, 'A bird or a stone, or a man or a wise man, means simply an object having such and such attributes. The real meaning of the word man is those attributes, and not Smith, Brown, and the remainder of the individuals. The word mortal, in like manner, connotes a certain attribute or attributes, and when we say "all men are mortal," the meaning of the proposition is, that all beings which possess the one set of attributes possess also the

[1] 'With none but names of individuals (or, in other words, proper names) we might, by pronouncing the name, suggest the idea of the object, but we could not assert any proposition, except the unmeaning ones formed by predicating two proper names of one another.' Mill, Logic, iv. 4, 3.

other[1]. If, in our experience, the attributes connoted by man are always accompanied by the attribute connoted by mortal, it will follow as a consequence, that the class man will be wholly included in the class mortal, and that mortal will be a name of all things of which man is a name; but why? Those objects are brought under the name by possessing the attributes connoted by it: but their possession of the attributes is the real condition on which the truth of the proposition depends, not their being called by the name. Connotative names do not precede, but follow the attributes which they connote.'

It is clear from this that Mill takes name as something given, not as something which has developed as a sign by which an indefinite number of individuals can be denoted. He even admits that 'a class is absolutely nothing but such a general name[2].' But is a name given? It may be so with us, but what we want to know is how for the first time the human mind came to form a proposition. Neither name nor concept did then exist, and the way in which they were formed was to localise a root, and say, for instance, 'Dig-here,' i. e. Digger. This name became inevitably a general term, for even if first used of one man, it could likewise be used of others, it could form a dual or a plural. Now, if people wished to say that one digger or many diggers were old, perhaps they had as yet no name for old; or if they had, that name meant no more than

[1] Or, as Hobbes expresses it, that the new predicate is a name of the same thing of which the subject is the name.

[2] Logic, i. 5. 3.

'decay-here,' i. e. a decaying one, a mortal. How then was the new proposition to be formed? Simply by making the predicate (decay-here) the name of the same thing of which digger was the name, by saying in fact, 'dig-here = decay-here.'

At a later time this process became, no doubt, abbreviated, by saying 'fossor mortalis,' or 'fossores moriuntur,' but the original process can still be perceived even in the most modern propositions. We see everywhere that two names are used of the same subject, or, as we may also express it, that the same subject is called by two names and referred to two classes. When I say, 'this man is wise,' I predicate both manhood and wisdom of the same individual, and I cannot do this except after having framed two names. 'Connotative names do not follow the attributes which they connote,' as Mill imagines: they are coincident with them, or may even anticipate them. The attributes do not exist, at least for us, except after having been conceived and named, and as to the full connotation, that of course is but slowly worked out. It follows the name, it cannot precede it. The connotation of man, for instance, suppose it meant originally the measurer or thinker, is not exhausted even now, because the full intension of the name has not yet been exhausted and defined, and though the name itself has been used for thousands of years, we cannot tell yet what man is, or all we mean by man. After names have been formed, their connotation and their definition are determined more and more accurately by slow experience, and so indirectly are our propositions. It is quite true, for instance, that such a proposition as 'the diamond is combustible' was not thought of

when the words 'Diamond' and 'Combustible' were first framed. Nor would it have been right to bring these two words together in a proposition at any time before the year or the day or the hour when the first experiment to burn a diamond had proved successful. But as soon as that experiment had succeeded, the indefinite extension of the word incombustible became narrowed, that of combustible became enlarged, and the intension of the word diamond became more complete. People were justified then in predicating Combustible of Diamond, or to predicate the name of Combustible of the same thing of which the name of Diamond had been predicated, just as we are justified in predicating either sage or fool of Socrates the moment we have observed that he possesses or possessed those attributes which, when observed in other persons, we call wisdom or folly.

Synthetical and Analytical Propositions.

In order to arrive at a clear understanding of the nature of a proposition, we ought to see that particular and universal are really the same as synthetical and analytical judgments. If I say 'some men are mortal,' the proposition is purely synthetical, quite as much as if I say 'some men are yellow.' I simply assert the fact that, according to our experience, the names man and mortal, man and yellow, happen to be predicable of the same individuals. But as soon as I say 'all men are mortal,' or 'man is mortal,' I state not simply an experience, for all men can never form the subject of an experience, but I state that whatever deserves to be called man, deserves also to be called mortal; that a man would cease to be called a man, if he ceased to grow old, that growth and

decay are the sine quâ non of what we call manhood.

In other words, the truth of particular and synthetical propositions depends always on experience, the truth of a universal proposition depends either on analysis or on the knowledge of a cause, coupled in many cases with a belief in the uniformity of nature. If I say some men, few or many, are mortal, I assert nothing but my knowledge of a fact. My statement may be true or false, but in making it, I do nothing but assert its correctness, which can be proved or disproved by experience or by experiment. In universal propositions, on the contrary, if they are analytical, experience is no longer the immediate test of truth.

We saw that the statement that a diamond is incombustible was perfectly right till the experience of burning a diamond had succeeded. After that it was right to form a synthetical proposition, this diamond is combustible, and after many such experiments, many diamonds are combustible. If, however, on the strength of this, people went on to say, all diamonds are combustible, they acted on faith, on faith in what is called the uniformity of nature. Such faith is quite justified for all practical purposes, provided we always understand that it can only last till the contrary is proved.

But the same proposition, all diamonds are combustible, can also take another meaning, when I imply, not only that they will, but that they must prove combustible. And why? Because we have discovered something in the nature of a diamond which necessitates its liability to combustion, so much so that if we saw a diamond resisting all

combustion, we should feel bound to say that it was not what we call a diamond, and ought, at all events for scientific purposes, to be called by another name.

It has often been stated by writers on Formal Logic that 'all bodies are extended' is an analytical, 'all bodies are heavy' a synthetical proposition. The former is analytical, because extension is part of the intension of the name body, or, as Mill would say, is always connoted by body. The other is synthetical so long as we mean no more than that all bodies we have ever come across have proved to be heavy. But if we are able to prove that there is something in the nature of a body which necessitates its liability to weight, our proposition would again become analytical, that is to say, we should feel obliged to invent a new name, instead of body, for something that proves to be imponderable[1]. 'Imponderable body' would become as contradictory as 'unextended body' or as 'square circle.' If heavy is the name given to something which, whether we hold it in our hands or place it in the scales of a balance, pulls toward the centre of gravity, then the proposition 'all bodies are heavy' is as much universal, as much analytical as 'all bodies are extended.'

The question whether the proposition 'all bodies are extended' possesses what Kant calls à priori certainty, does not concern us here. But it is important to observe that while Kant in his 'Critique of Pure Reason' treated the proposition 'all bodies are heavy' as derived from experience, he claims for it in his 'Metaphysische Anfangsgründe der Naturwissen-

[1] Dr. Whewell proposed 'imponderable agencies' instead of 'imponderable substances.' See Mill, Logic, iii. 14, 6.

schaft' the same à priori certainty as for the proposition 'all bodies are extended.'

A better acquaintance with the antecedents of the words which we employ in making propositions would often show us how many of them are purely tautological. In Sanskrit one of the names for man is marta, which means mortal. In English, too, we can speak of mortals very much in the sense of men. If then we were to say 'all mortals are mortal,' instead of 'all men are mortals,' we should see at once that our proposition was not only analytical, but tautological, that we used not different names, but the same name both as subject and as predicate. Tautological Propositions.

Much the same applies to such propositions as 'All roses are rosy,' or 'All lilacs are lilac,' only that after a time the meaning of the names rose or lilac may change so much that 'rosiness' or 'lilacness,' instead of being a proprium, becomes a mere accident of roses and lilacs, in which case we must be content with a synthetical instead of an analytical judgment. We may say, 'Some roses are rosy,' but language does no longer allow us to say 'All roses are rosy.'

This is of some importance for the formation of syllogisms also, as we see, if we tried to form the mood Darii, by Tautological Syllogisms.

All mortals are mortal,
Cajus is a mortal,
Therefore Cajus is a mortal.

There is, no doubt, a difference in the genesis of analytical propositions, some being self-evident from the first, almost tautological, such as 'all bodies are extended,' others depending on the discovery of a

reason why, as for instance, 'all bodies are heavy.' But in the eyes of Formal Logic they both stand on the same level, and they rest on the same principle, namely that we may or may not assent to use two words of the same thing. If in spite of the fact that all bodies are heavy, we go on to speak of imponderable bodies, we do it at our own risk, we stretch the connotation of body beyond its proper limits, till our names and concepts split, and in consequence do not hold water for the purpose of correct reasoning. But whatever view we take of these things, the definition of a proposition given by Hobbes will always turn out right, and in full agreement with the historical process by which, as we saw, the human mind arrived at the stage of propositions. Only we must not forget that a name is more than a sound and a sign, that it is something inseparable from our concepts, something without which no concepts could exist. If we bear this in mind it will no longer sound so very wonderful that, as Hobbes said, in every proposition the predicate is a name (i. e. concept) of the same thing of which the subject is a name (i. e. concept), or that in every proposition we bring the same thing under two names and concepts.

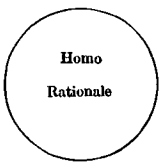
Euler's Figures.

If we represent propositions by circles, according to the system invented by Euler[1], we have only to substitute the extension of a name for that of the concept, or rather to combine the two in one, and everything will become perfectly clear.

(1) If we have to deal with two names, having exactly the same meaning, or, as logicians say, the

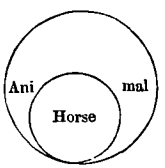
[1] Schopenhauer, Werke, vol. ii. p. 50.

same connotation and denotation, the same intension and extension, two circles exactly covering each other would represent such tautological propositions as:



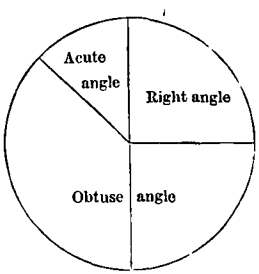
'All men are rational.'

(2) If the meaning of one name is entirely included in that of another name, we get the proposition:



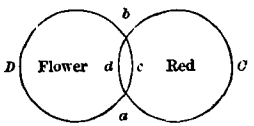
'Whatever deserves to be called horse, deserves to be called animal,' i. e. 'all horses are animals.'

(3) If the meaning of one name is completely exhausted by two or more names which exclude each other, we get the proposition:



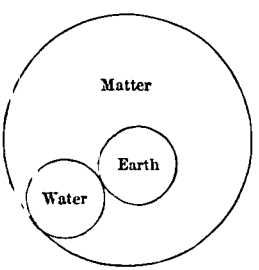
'Whatever deserves to be called angle is either right, obtuse, or acute,' or, 'all angles are either right, obtuse, or acute.'

(4) If two names are applicable to the same thing, we may get the particular proposition:



'Some things which are called flowers may be called red,' and 'some things which are called red may be called flowers.' From this follows also another proposition, namely that some flowers may not be red, or that some red things may not be flowers, which does not add much to our knowledge.

(5) If two names exclude each other, but are both contained in another name, then according to No. 2,



'All that is called water deserves to be called matter,' and 'All that is called earth, deserves to be called matter.' According to No. 4, 'Some of what is called matter deserves to be called earth, while some deserves to be called water.' According to No. 3, 'All that deserves to be called matter, is either water, earth, or something else, not yet named.' Lastly, 'Nothing that may be called earth may be called water, though both may be called matter.'

After having shown how closely the results ob-

tained by the students of language and thought agree with the views advanced by Hobbes on the true nature of propositions, it will not be necessary to say more than a few words about the syllogism. Syllogism.

Though, as I remarked before, the syllogism concerns us but little in the Science of Thought, yet if the view which we have taken of a proposition be correct, the theory of the syllogism, which is but a combination of propositions, may possibly receive some new light also. A proposition, as we saw, expresses the belief of the speaker that the predicate is a name of the same thing of which the subject is the name. Given, therefore, two propositions, having one name in common, such as man, in 'Cajus is a man,' 'all men are mortal,' the syllogism says that an individual Cajus is nameable by the name of mortal, because he is nameable by the name of man which is always nameable by the name of mortal. Or, expressed in the ordinary language of logic[1], 'Cajus is thought as contained in a certain set of attributes or class, because contained in one which that set or class contains.' And negatively, 'Cajus is nameable by the name of man, and as man is never nameable by the name of bird, therefore Cajus is not nameable by the name of bird.' Or, expressed in the ordinary language of logic, 'Cajus is thought as excluded from a certain set of attributes or class, because contained in one which that class excludes.' We may put this into a still shorter form by saying that a syllogism expresses the belief that two names of the same things may be names

[1] T. H. Green, Works, vol. ii. p. 161.

of each other. If Cajus and mortal are both names of the same thing, namely man (whether one, many, or all), mortal may be the name of Cajus. In this we take no account of the character of the premisses, whether affirmative or negative, whether singular or universal, but the application of our general principle to these special cases will cause no difficulty.

The ordinary syllogism is often no more than a definition of synonyms, or a correction of language; it would become almost superfluous, if the words which we use had been framed according to a perfect system, and not at haphazard. For instance, if we used biped as synonymous with man, a syllogism would at once help to correct us. We should say:

All bipeds are men,
A sparrow is a biped,
Therefore a sparrow is a man.

Unless then we are willing to accept this conclusion, we must correct the definition of biped, and say:

All featherless bipeds are men,
A sparrow is not featherless,
Therefore a sparrow is not a man.

Logicians have pointed out long ago that everything in a syllogism depends on the premisses, and that if they are right, we really want no conclusion at all. For instance, if I know that all men are mortal, I know at once and without any syllogistic process that the man Cajus is mortal, for otherwise all men would not be mortal. So again, if I know that Cajus is a man, I know that he possesses all the properties of man, and among them that of mortality, which the major asserts as a universal mark of man; I know therefore already that Cajus is mortal. This

is clearly stated by Lotze, when he says: 'Instead of proving the truth of the conclusion by their own independent truth, the two premisses themselves are only true on the supposition of its truth, and this double circle seems at first to make the syllogism logically quite inoperative.' We have only to use mortal in the sense of man, and the circle becomes evident:—

All mortals are mortal,
Cajus is a mortal,
Therefore Cajus is a mortal.

Tempting as the further elucidation of this subject is, this is not the place for it. I have to confine myself to the foundations of the Science of Thought, and it must be left to the formal logician to work out the general principles, and to test their truth by applying them to all the minute subdivisions of syllogistic reasoning.

CHAPTER X.

CONCLUSION.

What have we gained?

If any patient reader has followed me so far on a path which I know quite well has been neither smooth nor pleasant, I should not be surprised if he were to ask: What then have we achieved with all our toil and trouble? To some it may seem very little. We are the same, they may say, as we were at the beginning of our journey. We speak, we think, we reason, as we have always spoken, and thought, and reasoned, and we shall never achieve much more in this life than to see through a glass darkly.

It may be so: but if wisdom consists in knowing our ignorance, to know that we see through a glass darkly would represent a considerable gain. Still greater would be the gain, if we knew that it was 'through the glass,' that is, 'because of the glass' that we see so darkly, and greatest of all, if we could find out what that glass really is which makes us see so darkly.

Now this has been the very object of our toilsome journey. We have found out that the glass through which we see darkly is language, and we have also discovered something in the very nature of language which accounts for its partial darkness and

its partial light. I cannot say as an Alpine guide might say to his friends, upon reaching the highest peak, 'Now take off your blue spectacles, and see with your own eyes.' On the contrary, I have tried to show why we can never do without the blue spectacles of language, why our thought must always be phenomenal, that is, clothed in words. But to know that we are wearing such spectacles is something, and to be able to make allowance for their colour and their concavity or convexity is better still, and to try from time to time to remove the dust and mist that fall and gather on our glasses is the best of all, and that is what I have tried to do myself, and what I have advised my friends to do likewise.

Thought and Language inseparable.

No one, I believe, will be able in future to dispute the fact that thought without language or some other kind of embodiment is impossible. What we have been in the habit of calling thought is but the reverse of a coin of which the obverse is articulate sound, while the current coin is one and indivisible, neither thought nor sound, but word.

Logic and Grammar.

Such however is the almost irresistible charm of language that even the greatest philosophers, though they could not but admit that thought without language was a mere phantom, yet continued to treat of thought and of the laws of thought as if they existed by themselves. Logicians particularly were very eager to teach us that the laws of thought should not be confounded with the laws of language, that logic was one thing and grammar another, that logic was the same for all languages, grammar something peculiar to each. As if logic

could exist anywhere except in language, manifested under various forms, no doubt, but realised nowhere but under these various forms, just as the Beautiful is realised in the myriad forms of nature. Logic, as a kind of general grammar, has been abstracted from the grammars of the world, not grammar from logic.

Philosophy deals with Language.

No philosopher, if pressed on this point, is able to deny it. I gave a string of utterances of the most authoritative philosophers, all more or less willingly admitting the inseparableness of language and thought. To some it seems a mere truism, to others a truth that is inconvenient, but one that cannot well be denied. But as to drawing the inevitable consequences, as to seeing that thought lives in language, and in language only, and that philosophy must learn to deal with language, as history deals with events—not one philosopher that I know of has ever dared to say so.

For the sake of making my meaning clear, I spoke just now of language as spectacles, but in reality language constitutes our very eyes. Language is the true organ of our mind. We think with our words as we see with our eyes; and we must not forget that even our eyes are only lenses, and our words only instruments, and that the Self who seems to see and the Self who seems to think, is different both from the eyes and from the words. Who that Self is, cannot be asked or answered here. If life lasts, I mean to answer it in another treatise.

At present I only recapitulate what I have tried to establish in the present treatise, namely, that thought is impossible without language, and that

language forms the organ of thought, as much as the eye forms the organ of sight, and that the first, if not the only, subject which every true philosopher has to deal with, is language.

The next point to be determined was: Can we know anything of this organ? We study the structure of the eye till we can imitate it by a kind of artificial eye, called spectacles. The theory of vision has revealed many secrets to us, has warned us against many illusions, has, so to say, opened our eyes, so that it leaves us, in the end, aware of those illusions, even though unable to fight against them. Nature of Language.

The same with language. Language seemed a very mysterious thing, the most wonderful gift bestowed on man by a divine power. Whoever began to meditate on it, felt bewildered, like the naturalist lost in a primeval forest, and the wisest that could be said about language seemed to be that it was beyond human conception. And now, how different! We have perhaps not been as successful yet as certain physiologists who have traced the eye and the faculty of vision back to a sore place in the epidermis of one of our ancestors. But so far from being mysterious and wonderful, language has become perfectly simple and intelligible. Give us about 800 roots, and we can explain the largest dictionary; give us about 121 concepts, and we can account for the 800 roots. Even these 121 concepts might be reduced to a much smaller number, if we cared to do so. Any one who examines them carefully, will see how easy it would have been to express to dig by to cut or to strike; to bite by to cut or to crush; to milk by to squeeze; to glean by

to gather; to steal by to lift. Many concepts, such as to cook, to roast, to measure, to dress, to adorn, belong clearly to a latter phase of civilised life. If we see how many special purposes can be served by one such root as I, to go, or PAS, to fasten, the idea that a dozen of roots might have been made to supply the whole wealth of our dictionary, appears in itself by no means so ridiculous as is often supposed. However, to have reduced all our thoughts to about 121 concepts, and all our words to about 800 roots, is an advance. We need no longer stare at language as something wonderful by its complexity, but we may look at it intelligently, gain an insight into it, and admire it in the end all the more, not for its wonderful complexity, but for its far more wonderful simplicity.

Language begins with Roots, not with Nouns or Verbs.

The explanation of the actual origin of roots must naturally retain something of an hypothetical character, like the solution of all problems which carry us back to times when man can hardly be said to have been man, when language was not yet language, and reason not yet reason. We cannot speak dogmatically about those far off regions, but we have done all that can fairly be expected, if we suggest an explanation that is possible and intelligible. Such seems to me Noiré's suggestion that roots owe their origin to the clamor concomitans of our early social acts. I look upon this clamor, not only as concomitans, but as significans, namely as soon as it is used for the purpose of reminding ourselves and others of these acts themselves, and I therefore see the true origin of language and thought in the roots, as signs of our acts.

It is of these our own self-willed acts, that we become conscious without any effort, and not till we have become conscious of these acts as acts, that is to say, as perceived in their results, can we make the next step, that of naming the results of our acts by the roots which signify these acts. Others, however, place the origin of language, not in the roots as signs of acts, but in the first conceiving and naming of the objective products of our acts, nor do I deny that language may be so defined as to begin with nouns or names of objects[1]. We might say with the same right that the organic life of our globe begins with stratified rocks, and that what lies beneath, is not yet fertile earth. Nevertheless, not only would the regular stratified rocks be impossible without the underlying volcanic masses, but we often see how they break through the stratified rocks, and in metamorphic layers form an essential part of them. The same applies to language in more minute detail than we imagine. Those who consider that nothing deserves the name of language that is not, so to say, stratified or organic, very properly begin the history of language with the names of objects. I go a step further back, and date that history from the first appearance of roots, as signs of self-willed acts, because it was by these roots only, that afterwards the objective products of such acts could at one and the same time be both conceived and named. If we denied the name of language to those early beginnings, we should have to deny it likewise to all interjectional and mimetic ex-

[1] Herder, in his Essay 'Über den Ursprung der Sprache,' says: 'Der Gedanke an die Sache selbst schwebte noch zwischen dem Handlenden und der Handlung.'

pressions. In one sense, this would be perfectly right; but, taking languages, such as they are, we cannot deny that, within a limited sphere, we make use of interjections and imitations of natural sounds for the sake of communication. Lastly, while others would prefer to treat all demonstrative elements as a kind of detritus of earlier roots, I see no reason why we should not accept them as real survivals of a period of speech during which pantomime, gesture, pointing with the fingers to actual things were still indispensable ingredients of all conversation. Still, if one thinks of the distance which divides us, not only in time and space, but in very thought from the men whose mind we undertake to analyse, one shrinks from making any positive assertion. If anything teaches us the lesson that what is likely and natural is not always what is real, it is a study of language, in which anomaly becomes as often analogy, as analogy becomes anomaly. Many times have I envied others the gift of confident assertion, for whenever I venture at all to speak about the origin of speech, and to reason about the beginning of reason, I cannot bring myself to say more than may, even when in my own mind I feel as convinced as possible that what I state must have been as I state it, and could not have been otherwise. I willingly admit that we may so define language as to exclude interjections, demonstrative elements, and even roots. But to me such a definition seems too narrow, and to leave a most important and difficult phase in the growth of reason and language unexplained.

Radical Analysis.

In order to show how few simple elements remain if we analyse any sentence into its constituent element, I choose the first para-

graph of a leading article in the Times of Nov. 9th, 1886:

'Every Englishman is entitled to his grievance, as may be proved out of Magna Charta and the Bill of Rights.'

Every is ever-each. Ever, A.S. æfre, goes back to Gothic aivs, Lat. aevum, Sk. evam, from root I, to go.

Each is á-líc, i. e. aye-like, Germ. jeglich, from á, Germ. je, and this from the same root I (in eva), and lic, Sk. *dris*, from root DÆRS, to see.

English-man. English and England, not from angulus, as Beda tells us, and modern historians repeat, but from the Angrarii, the old Angrivarii, mentioned by Tacitus[1]. Ang-ra was probably a proper name (possibly connected with Ingae-vones); varii is the A. S. ware, from root VÆR, to keep off, to guard. Man, from root MAN, to measure, to think.

Is, from root AS, to breathe, to be; Sk. asti, Gr. ἐστί, Lat. est.

Entitled, from title, Lat. titulus, derived from root KI, to consider, to honour, Greek τί-ω, τι-μή, etc.; or for sti-tulus, i. e. what is stood up or put up (like tabula), from root STÂ, to stand.

To, demonstrative element, meaning, direction towards a thing.

His, gen. of he, demonstrative element.

Grievance, from old French grever, Lat. gravare, to burden, and this from gravis, Gr. βαρύς, Sk. guru, Goth. kaur-s; root GÆR, otherwise not found in Sanskrit.

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[1] See M. M.'s Chips from a German Workshop, vol. iii. p. 123.

As, for also, alswa, A. S. eal swá, from eal, all, Goth. all-s, possibly from root AL, to grow (see p. 399), and swá, in one's own way, from Sk. sva-s, suus.

May, from A. S. mugan, to be able, root MA*m*H, to be strong.

Be, from root BHÛ, to be, to grow.

Proved, from O. F. prover, Lat. probare, probus, good, fit. Probus has been derived by Corssen from Sk. pra + bhu, which is doubtful.

Out, Sk. ud, forth, demonstrative element.

Of, Sk. apa, away, demonstrative element.

Magna, Lat. magnus, from root MA*m*H, to be strong.

Charta, Lat. charta, paper, Gr. χάρτη, from root SKAR, to shear.

And, Sanskrit anti, near.

The, demonstrative element, ta in Sanskrit.

Bill, Lat. bulla, what bulges out, a water bubble, a boss (attached to a document), from root GAL, to drop.

Rights, Lat. rectum, from regere, root ARÑG, to stretch.

The writer of this article in the Times was little aware of the unbroken threads that united his thoughts and words with the earliest utterances of the Aryan race: and yet not one word could he have written, if those distant ancestors had not toiled for him, shaping their involuntary social cries into voluntary signs, and elaborating their roots and words till what was scratched came to mean a charter, and what bubbled up became bulla, a knob or round seal attached to charters, supplying likewise for future ages such useful words as Papal bulls, bulletins,

bullets, billets, bouleversements, and many other more or less serious bubbles.

Simplicity of Thought.

The simplicity of our language has now been rendered clear to everybody, but the equal simplicity of our thought is still far from being recognised. Even those who see that the mind cannot possibly do anything but frame words out of given materials and employ them for its own purposes, cannot give up the idea that there is something mysterious in that employment, something difficult or impossible to account for by human philosophy. And yet we have only to ask ourselves what we are doing when we say that we think, in order to find out that all comes back to a is b, or a is not b. We have words which contain all that we put into them, neither more nor less[1]. With these words we form propositions, and combinations of propositions which we call syllogisms, and we may try what we like, we can never do more.

Poetry and Argument.

But poetry, it is objected, is surely more than a mere pouring out of our dictionaries, and accurate argument more than a fitting together of stray words. Yes, there is method in the madness of poetry, as there is method in the dryest argument. But poetry, in the widest sense, may well be likened to a shaking of the kaleidoscope of our words and thoughts. The genius of the true poet consists in the power and boldness with which he can stir his mental kaleidoscope, his taste is shown in retaining those combinations of

[1] Thus an early commentator of Aristotle said: Οὐ δεῖ πλέον ἐπιζητεῖν παρὰ τοῦ λόγου ἢ ὅσον ἐπιδέχεται ἡ τῶν πραγμάτων σαφήνεια. See Noiré, Logos, p. 173.

brilliant gems which please him and are likely to please others whom he wishes to please. And the most closely reasoned argument of the philosopher, what is it but a careful measuring of every word, and dovetailing them so as to allow of no breaks or gaps? We are so accustomed to poetic imagery and exaggerated rhapsodies when we speak of our mind, that we naturally shrink from such prosaic views. But here, as elsewhere, we must remember that things remain what they are, even though we bring them under new categories. Homer remains as great a poet or maker as ever, even though we can clearly see how he put together the words forming the invocation to the Muse, asking her to tell him of the much-travelled man who was much tossed about, after he had destroyed the sacred city of Troy. Nor does our admiration of Newton grow less if we are told that he discovered the law of gravitation, not by the sight of a falling apple, but by patient addition and substraction. There remains mystery enough even after we have examined the brushes and the colours with which Rafael created his Madonna di San Sisto, but to my mind the simpler the means by which the grandest triumphs of human nature were obtained, the more wonderful the result.

Simplicity of the Mind.

If then the process of thought is so simple as we saw, not less simple, at least, than that of speech, it follows, that the complicated apparatus which had been postulated by most philosophers for the performance of thought in its various spheres of manifestation, must make room for much plainer machinery. Instead of intuition, intellect, understanding, mind, reason, genius, judgment, and all the rest, we want really nothing but a

self-conscious Monon, capable of changing all that is supplied by the senses into percepts, concepts, and names. These changes may be represented as something very marvellous, and we may imagine any number of powers and faculties for the performance of them. We may ascribe the change of sensations into percepts to the power of imagination (Einbildungskraft); the change of percepts into concepts to the understanding, the change of concepts into names to the Logos, the formation of propositions to our judgment, and the formation of syllogisms to our reason. We may employ this or any other more or less mythological terminology for the so-called faculties of the mind. But we may also adopt a far more straightforward process.

Names.

If we simply take what we find given us, what we really have to deal with are names, names which represent percepts, which represent sensations. We never find any of these ingredients by themselves. Except the names which cannot be argued away, everything else is the result of our own scientific analysis. With us, as self-conscious Mona, even sensations never exist by themselves. They remain mere irritations, till they are perceived. Afterwards, when we call them percepts, or, with Kant, Anschauungen, they seem to be something by themselves, but again they are not. We never have a percept or an Anschauung, except we can lay hold of it conceptually. We often look at a picture of Tintoretto's, without knowing what it is. For a time we see nothing but colour and chaos, and emerging from it here and there something like a leg, or a hoof, or a cloud, till gradually we discover the outlines of men and women and houses and trees,

that is to say, we bring our percepts (Anschauungen) under concepts (Begriffe). We now say that we understand and comprehend the picture, while before we only stared at it and were irritated by the sensations which it produced on our retina. And as it is with a picture, so it is with reality, though we are hardly aware of it. When we see some motion among the branches of distant trees, we do not know yet whether it is something that moves by itself or something that is moved. As soon as we perceive a body moving through the branches, we know it must be an animal, whether a bird, or a deer, or a man. As soon as we observe four legs, we know it is some quadruped, and when we remark its antlers and its fallow skin, we know it is a stag. This process goes on constantly, but it goes on so quickly that we are hardly aware how we try on concept after concept from body, animal, quadruped, deer down to stag, till at last we find the concept that really fits. But the shot is fired before the animal has time to run away. And this applies to every percept. We do not perceive green, till we conceive a colour that might be blue, or yellow, or grey, but is by us conceived as green. We do not perceive ten, till we have counted twice five, or five times two, or some number, i. e. concept, which is more than nine and less than eleven. And if we cannot perceive without conceiving, neither can we conceive without naming. We may name ten by 2×5 or 5×2, or $9 + 1$, or by $11 - 1$, but without some such name ten does not exist for us. Nor does green, nor does stag, nor does deer, or quadruped, or animal, or body, or something or nothing.

If then we have learnt how we name, we have

learnt also how we conceive and perceive, in fact we know, what we wanted to know, how we think. The material of thought is, no doubt, given us, but we cannot even perceive it without first submitting it to the forms of sensuous intuition and to our categories. Kant's so-called forms of intuition amount to no more than that whatever is to exist for us, must be in some place and at some time. What is nowhere and never, is to us as if it were not. As to the categories or the forms of our understanding, we mean no more by them than that without these forms of synthesis we could not understand anything that is given to us in space and time. They are the simplest necessities: they are what we cannot do without, however hard we try. How could we understand what is given to us, unless we applied to it the category of causality, that is, unless we accepted our sensations as caused by something in time and space? It is thus that we get an objective world, but in it again, we cannot understand any object, unless we take it as a substance endowed with qualities. Having thus applied the fundamental categories of οὐσία and ποιόν, all the others follow in regular succession, and the world of thought is finished, before we are aware of it. Given a self-conscious Monon, capable of adding and substracting, and there is nothing which can properly be called thought, from the hymns of the Veda to the last poem of Browning, that is not perfectly intelligible in its structure. Let those who doubt it, try the experiment, and they will see that the Science of Thought has really solved the riddle which it undertook to solve.

I know, of course, that every effort will be made to controvert the conclusions at which we have arrived. If this were true, it will be said, if all

thought were embodied in words, if to think were to speak, if to reason were to combine and to separate, all our knowledge would be merely verbal — a conclusion sure to horrify not only the intellect, but the common sense of our age. 'Merely verbal,' 'merely nominal,' are the most condemnatory terms by which in our days knowledge can be qualified. I have nothing to say against this contempt of mere words; I should share it, if only I could ever meet with mere words, mere flatus vocis. Mere words have no existence at all except in dictionaries, where they are perfectly harmless, and in the brains of certain philosophers, where we cannot say quite the same of them. But leave out the mere, and no man of common intellect or common sense will maintain that we can ever know anything except through words. There are some brave disputants who assure us that they do not care for words, but for facts only. We know gold and silver, copper and brass, they say, which we can see and touch and assay without using any words at all. Their names tell us nothing, all that we know of them we know through our eyes or through our hands. Leave us our things, we leave you your words.

Verbal knowledge.

But what are things? Things, as Dr. Lewins has well said, are thinks, and thinks, I add, are words. Who ever knew a thing, if by thing is meant what is independent of thought? And who ever knew a thought, if by thought is meant something independent of language? We speak of gold, but how do we know gold? Certainly not by our eyes. Our eyes may receive the reflection of gold, but that is a subjective impression

Gold.

only, which comes and goes without even becoming an object to us, till we ourselves translate certain impressions into a percept, till our knowledge becomes subjective, and what we know becomes objective to us. What we afterwards call gold, is at first a very vague object, something to be handled, to be kept or thrown away, and no more. It is not yet even a stone or a metal to us, for how should we know anything of stones or metals, precious or otherwise, before we have even the names of them? There are languages without names for gold, and many more without names for metal, and the utmost we can expect as a first attempt at knowing gold, would be something we like to keep, something that pleases us, something that glitters, and no more.

Then, how do we come to know gold? Of course we begin with our senses, and with the percepts or intuitions with which they supply us. On them all our knowledge and language are founded, but they by themselves are neither knowledge nor language. Our percepts become knowledge by being named, and they become named by being conceived. We distinguish these three stages, but we cannot imagine their separate existence. A perception per se would be a dull state of sensuous tremor; a name by itself would be a mere sound; a concept by itself would be even less than a sound. Percepts by themselves are nothing, concepts by themselves are nothing, names by themselves are nothing, but the three together are knowledge. The steps leading up to a knowledge of gold must have been very gradual. At first, what we now call gold, would probably have been no more than what was 'dug up.' It would have been known as the result of

digging, and called by a name derived from the clamor concomitans of digging, such as SAK or KHAN[1]. Or it might have been classed among glittering things, and been called rukma, vasu, *k*andra, ar*g*una, all names of bright things, and especially of gold in Sanskrit. Nor can I bring myself to believe, when Sanskrit possessed so many names for gold, that the most common name of all, namely hira*n*ya, should not come from an Aryan root. There is the root HAR, with the meaning of brightness, which yielded, as we saw[2], many names of bright colours. From it comes har-i*n*a, Zend zairina, Old Slav. zelenŭ, gold, which would account for Greek χλουνός, a rare name for gold, quoted by Hesychius. By the side of hari*n*a, we have in Sanskrit harita, a Vedic name for gold, Zend hairita, identified with Lith. geltas, and Old Slav. zlŭtŭ. Can we suppose that the Greek χρυ-σός is unconnected with these words, and borrowed from Hebrew châr*û*z, or Assyrian hurâsu, as Hehn, Benfey, and Schrader suggest? First of all, châr*û*z is a scarce and poetical name for gold in Hebrew; secondly, why should châr*û*z have been pronounced χρυσός? Words ending in σος are very uncommon in Greek, but if har can become zlŭ in Old Slavonic, it may have become χρο in Greek, and a derivative χροτ-ιος[3] would regularly have become χροσος in Greek, so that the only anomaly is the transition of *o* into *υ*, which in a name passing, it may be, through

[1] The Hebrew châr*û*z, gold, comes from a root meaning to cut, to dig. Should nishka stand for ni*k*-shka?

[2] Page 304.

[3] The change of suffixes is dialectic, as in ἄργ-υρος, silver, Lat. arg-entum.

the mouths of foreign miners, may be excusable, though I say no more[1].

Gold therefore, when called χρυσός in Greek, was conceived as the glittering, from the root HAR, while another root, VAS, to shine, accounts for the Sk. vasu, gold, and for the Latin aurum (aurora), for ausum.

It may, no doubt, be said that to know gold simply as what is dug up or what glitters, is not much; but though it is not much of knowledge, it is knowledge; and that is much, that is in fact what constitutes our intellect, as distinguished from our senses. With every new concept there may be a new name, with every new name there will be more knowledge, and that knowledge, though it is certainly verbal or nominal, is not what can be called merely verbal or merely nominal. Whoever called a particular kind of dug up ore glitter or χρυσός, had an object in calling it so, and by calling it so he could for a time distinguish it, sufficiently for all practical purposes, from other kinds of ore. Having once framed that name and retained it, whatever new qualities a miner discovered as distinguishing this glitter from other kinds of glitters, would be added to its distinguishing features, or its connotation, as we call it; but every one of these qualities would again be known only on condition of its being named. Suppose it was discovered that gold, when struck would not break, but bend, thoughtless people, savages as we call them, would simply throw away what would not bend, and keep what would bend or break into smaller stones, if smaller stones were wanted for building or some other purpose. They

[1] On roots ending in ar or ru, see p. 365; and Brugmann, Grundriss, § 80.

might then (if they had a name for useless things), call gold rubbish, but not till they had name and concept, or concept and name for soft, could they call gold soft or malleable. And what was soft? What could be struck without breaking, what yielded, was pliant, flexible, could be rubbed till it became smooth and glittering. That was called soft, mollis, Sk. mṛ́d-u, from MṚD, to rub down. And it was the same with all other qualities which were discovered in gold. They could never be said to be discovered until they were named. People could not say that gold was not brittle, unless they had the notio and the nomen of brittle, i.e. breakable. They could not call it ductile, without having elaborated the concept of drawing out, nor could they call it by any other name, until they had elaborated a name with which, as if with a pair of tongs, they could lift a piece of gold from out a rubbish-heap of sensations in which it was hidden. It is a long way, no doubt, from glittering and malleable to specific gravity of 19·3, but every step on that long road was made like the first. It was a constant repetition of conceiving and naming, of naming and conceiving, which led to what we call true knowledge, and such true knowledge is always nominal and verbal, nor can it be anything else.

Of course it will be said by the despisers of what is called verbal knowledge, that such knowledge would not help us to distinguish between a sovereign and a brass penny. But they forget that we should not know either a gold sovereign or a brass penny without a name, that every name includes knowledge, and that it is only after we know what specific gravity means that we can weigh a sovereign and a penny, and distinguish one from the other. It

is true, we cannot wrap up all the qualities of gold in one name; one name can express one quality only; and by no means always the most important. The rest, however, are connoted and implied, and true knowledge consists in knowing both the notation and connotation of names. We might call gold, for instance, the enemy of Aqua Regia or nitro-muriatic acid, because that alone is able to dissolve or conquer gold; but even in that case we should have only one quality of gold actually expressed by its name, the rest being understood.

We see therefore that we must always begin with sensuous irritation and intuition, but that intuition by itself is not knowledge, conception by itself is not knowledge, name by itself is not knowledge. The three together only represent what we mean by knowledge, and the final embodiment of that knowledge is the word.

Matter.

This will become still clearer, if we examine a few names, not of tangible objects, such as gold, but of concepts to which nothing tangible corresponds, and which are nevertheless the most important ingredients of what we call knowledge. There is nothing tangible, for instance, that corresponds to the name of matter. We can touch gold, stone, and wood, but we never can touch matter, as such. If we look to the history of the word matter, we know, of course, that it was the Latin materies, used originally in the sense of the solid wood of a tree, then of wood or timber for building. That concept, having once been formed, was generalised so as to mean anything substantial out of which something was shaped and fashioned, and a distinction soon arose between the form, for

instance, of a wooden statue, and its substance or materies. Here it was still wood, but soon, when statues were made of metal or marble, these also were called materies. And when the question came to be asked what other things, and what the whole world was made of, what should it be called but again materies, or matter? Thus we came into possession of matter, a word to which nothing tangible can correspond, but which nevertheless has occupied the mind of the best thinkers more perhaps than any other word. Our age is said to suffer from materialism, to be materialistic, and the mere name is supposed to convey a severe condemnation. But what is the real meaning of matter, and how can we determine it? In this case we surely know nothing but the name. The senses can give us no information, for it is exactly what the senses do not present to us that we call matter. But when I say that we know matter by its name only, I do not mean the sound produced by the letters m, a, t, t, e, r, I mean the name, as name, as nomen and notio, and that name conveys neither more nor less than has been put into it by those who use it.

If that name had been used by philosophers only, or by men who weigh their words, and who, by means of a definition, can tell us exactly how much each word weighs, there would have been much less difficulty. But names are used by the wise and the foolish, and the foolish, as we know, are in such an immense majority that the wonder is that words have any definite sense left at all. With the people at large, matter can mean almost anything. What is the matter, they say. They speak of decaying matter, of important matters, and if you asked them

what was the real meaning of matter, they would probably use a most convenient verb, and reply, 'It does not matter.'

It is different with philosophers. They must be ready to give a definition of every word they use. They need not agree in their definitions of matter, and we know that they do not agree, but at all events whatever they know of matter is embodied in that word, and in its definition, which consists again of words.

If we asked our most advanced philosophers what they mean by matter, they would probably say that it is the most general name for whatever acts on our senses, what in German is called by a most telling word, wirklich, i. e. real, because working on us. I have tried to show (page 248) why Mill's definition of matter as 'the permanent possibility of sensation' is faulty. But I am quite willing to admit that matter may be called the objective cause of all that we perceive. For the very reason, however, that it is a cause, matter can never fall under the cognisance of our senses. All that we can predicate of matter is that it causes our sensations, that it exists in space and time, that it is one, but appears under an endless variety of phenomenal forms, that it remains unchanged in the change of outward appearances. It differs from the Ding an sich, because this, according to Kant, is beyond the forms of sensuous intuition (space and time), and beyond the category of causality; and it may be distinguished, at least in German, from stuff (Stoff), which means actual matter, or matter in the form in which it appears to our senses. Stuff changes and decays, matter is supposed to remain the same.

All this is embodied in the word matter, and except this word, there is no other vessel to hold all that it contains or means. We could not even define matter by a higher genus to which it and other things belong, for substance, which may seem to be a higher genus, if supposed to be without the qualifications of extension, is only a more abstract name for matter. The two words are to all intents and purposes synonymous, and the one comprises no more than the other. It is quite true that the meaning of a name may change, nay, that different authorities may give different interpretations of the same name. But that is also the fate of all our knowledge. It changes and, we hope, it grows. We know more of gold than Aristotle did, and therefore the name means more to us than it did to him. A philosopher knows more of matter than a plough-boy does, and therefore the same word conveys very different meanings to the one and the other. But whatever meaning it conveys is embalmed in the name, which contains to every man exactly what he has found in it or what he has added to it.

Materialism.

People are very apt to speak contemptuously of quarrels about names, or, as the favourite phrase goes, mere names. But is the fight about Materialism which fills all our books and journals a mere fight about words? Is it simply a question whether we should call matter materies, or hyle, or Stoff? Hardly, for such a question would not stir our hearts or rouse our passions as they are roused when the issues of Materialism are discussed. Nor is there anything in matter to rouse our passions, or to excite our approval or disapproval. Matter is all that is given us to know.

It is immense, it is marvellous, it is incomprehensible, or, at all events, what we can comprehend of it, is but a very small portion, and yet that small portion constitutes nearly the whole wisdom of the human race. Why then should we be angry with matter, matter which, when it was called by the more poetical name of Nature, has been called a kind mother, and has been worshipped among the ancient gods of the world?

There is no harm in matter, unless we put harm into it. And this is what we do, if we forget that matter is always objective, and therefore impossible without a subject, that it is one-half only, and cannot be the whole of the world. Matter could not exist without us, I do not mean without any single individual, but without that subjective and knowing side of the world which we represent as opposed to the objective or known side. Materialism may in one sense be said to be a grammatical blunder; it is the misapplication of a word which can be used in an oblique case only, but which Materialists use in the nominative. In another sense it is a logical blunder, because it rests on a confusion between the objective and the subjective. Matter can never be a subject, it can never know, because the name was framed to signify what is the object of our knowledge or what can be known. Materialism, therefore, in the ordinary sense of the word is self-contradictory. It begins with matter, such as it is, namely as objective, and then tries to show that by slow degrees it may become subjective. But A never becomes non-A. At first matter means what is perceived or is the cause of our perception, but in the end it is supposed to have come to mean the very opposite, namely

what perceives. What causes the irritations is confounded with what receives the irritations, what is perceived with what perceives, what is conceived with what is conscious, what is named with the namer. There we see how both language and thought contradict themselves. The object could never be conceived except as perceived by a subject, and yet, according to the teaching of Materialism, the perceiving subject is to be in the end the result of a development of the object. This is a fault, call it logical or grammatical; and the Science of Thought, based as it is on the historical growth of language, detects it at once, and shows up Materialism, in the ordinary sense of the word, as a schoolboy's blunder.

Spiritualism.

But if Materialism is one-sided, so is Spiritualism. Spirit, like Matter, is something with which the senses do not supply us. It has been postulated behind the various manifestations of our intellect as matter has been postulated behind the various manifestations of objective nature. Like matter, it is a name that may be interpreted in various ways, but which ought never to become self-contradictory. Now spirit is subjective and knowing, and if therefore Spiritualism tries to account for what is objective and known as the result of spirit, it commits the same blunder of which we accused Materialism. Spirit and Matter are in fact correlative terms. As a subject cannot exist without an object, nor an object without a subject, spirit cannot act without matter, nor matter without spirit. But as little as an object can produce a subject, or a subject an object, can matter produce spirit; or spirit produce matter. Matter is determined

by us quite as much as we are determined by matter. Spiritualism is therefore as untenable as Materialism, and it is only by a study of thought in language that we can learn what spirit and matter meant in the beginning, what they came to mean in time, and what we wish and bid them to mean in future. True philosophy, here as elsewhere, consists in a correction of language, and that correction may sometimes necessitate the total suppression of old words. Matter, in the usual sense of the word, as something outside and independent of us, does not exist. Spirit, in the usual sense of the word, as something inside and independent of the world without, does not exist. There exists a perceiving subject and a perceived object. Granted these two, and the whole world, so far as it is ours, is explained. All perception is realised in conceptual names, all that is perceived is realised in forms. The world consists of Nâma-rûpa, names and forms, as the old Indian philosophers discovered long ago, and as we shall have to discover ourselves, if we wish to understand the world.

At present I am only concerned to show how in all our most important interests we depend on names, how our best and truest knowledge is always nominal. What can the senses help us in settling the meaning of matter or spirit, and if the senses cannot, what can? Our mind, our intellect, it is said. Yes, by all means! But where do we find that mind and intellect? Some say, in the brain. The brain is a wonderful labyrinth; I have looked into it and examined it, but I cannot find any trace of mind or intellect in that conglomerate, as little as I can find it where the ancients saw it, in the

heart or the stomach. The brain may be a sine quâ non of intellect, as the eye is of sight, and the ear is of sound, but as little as the eye can see and the ear hear, can the brain think. I find intellect nowhere but in the products of intellect, namely, in words. These I can hear and perceive, these I can understand, nay, I can trace them from their present form to their most simple and natural beginnings. The whole world becomes clear and transparent as soon as I see it in words; not in sounds, but in words; in living, not in dead words; in words as independent of their sounds as the oyster is of its shell; in words which are thoughts as much as thoughts are words.

Species.

Let us take another of these word-thoughts or thought-words, which has been an apple of discord among philosophers for thousands of years, and which has of late become the chief topic of discussion among men of science. I mean Species. What can experience and experiment and the whole of natural science teach us about it? Nothing, simply nothing. We never see a species or handle a species. If we saw it, we should not know it, unless we had first learnt to think and name it. Our knowledge of species is purely nominal, if only we remember that nominal is gnominal. But I go further, and maintain that, as applied to natural history, species is a myth, that is, a spurious and deceitful word, and that Species must go into the same limbo as Titans and Centaurs, if we want to understand the real working of nature.

One of the most important books of this century is Darwin's Origin of Species. But has he told

us what species means? Read it from beginning to end, and you will not find a real definition of species in it. If Darwin had studied the history of the word species, I believe he would have called his book not the Origin, but the Abolition of Species, for, to my mind, the result of all his observations and all his reasonings is that the word species is dead, and must be struck out of the dictionary of philosophy and physical science. If Darwin is right, there are individuals, there are more or less prominent varieties, and there are genera, but species, in the old sense of the word, there are none. Darwin himself complains again and again (Origin of Species, p. 412) that no one has ever defined species and variety. 'No one has drawn,' he writes, 'any clear distinction between individual differences and slight varieties, or between more plainly marked varieties and sub-species, and species. On separate continents, and on different parts of the same continent, when divided by barriers of any kind, and on outlying islands, what a multitude of forms exist, which some experienced naturalists rank as varieties, others as geographical races and sub-species, and others as distinct though closely allied species.'

That Darwin and his fellow-workers have rendered excellent service by reducing the enormous number of species, is well known. 'The endless disputes,' as he says himself, 'whether or not some fifty species of British brambles are good species, will cease.' It has ceased, and we cannot be too grateful for it. But if Darwin had reasoned more boldly, he would have put an end, not only to the fifty species of brambles, but to all species, to the very name of species. Darwin seems to imagine that, according to the old definition,

all species were produced by special acts of creation[1].' This may have been so in England, it certainly was not the meaning assigned to species by philosophers in Germany or France. The term species was formed quite independently of theological ideas, and I doubt whether even the idea of a creation, in our sense of the word, was known when the Greek word εἶδος was formed and defined. Nor would Darwin himself be satisfied, if we thought he had done no more than to prove that species are not the result of special acts of creation. Few people really wanted such proof. What he has done was to show that the name of species should in many cases be replaced by that of variety, because the differences separating one species from another could be proved to be due to natural selection and other secondary laws. 'Differences,' he says[2], 'between any two forms, if not blended by intermediate gradations, are looked at by most naturalists as sufficient to raise both forms to the rank of species.' This, it is true, need not be Darwin's own opinion. But he goes on to say: 'Hereafter we shall be compelled to acknowledge that the only distinction between species and well-marked varieties is, that the latter are known, or believed to be connected at the present day by intermediate gradations, whereas species were formerly thus connected. It is quite possible that forms now generally acknowledged to be merely varieties may hereafter be thought worthy of specific names[3].'

If Darwin had attempted, as was formerly the fashion, to give a formal definition of variety, species, and genus, I believe he would have seen

[1] Darwin, Origin, p. 412. [2] Ibid., p. 426. [3] Ibid., p. 426.

that the term species had done its work and might in future be dispensed with altogether. He seems to see this himself, when he says[1]: 'We shall have to treat species in the same manner as those naturalists treat genera, who admit that genera are merely artificial combinations made for convenience.' 'This may not be a cheering prospect,' he adds, 'but we shall at least be freed from the vain search for the undiscovered and undiscoverable essence of the term species.'

What Darwin calls the undiscovered and undiscoverable essence, is really the meaning of species, and Darwin therefore acknowledges himself that the whole of his theory depends on the meaning of the word species. And who is to tell us the real meaning of that word, except those who framed it, who used it, and who after a time, when it has fulfilled its purpose, have a perfect right to kill it? No one will maintain that our senses can help us in this matter, for we never see a species unless we first make it. The first question therefore is an historical one, how was the word species formed, and what was it intended to signify?

In this sense a most interesting book might indeed be written 'On the Origin of Species;' showing how such a name came to be framed, how its meanings varied at different times, in different languages, and in different systems of philosophy, till at length it was left to our age, and especially to Darwin, to show that there is no such thing as species, and that for comprehending the variety of nature we want no more concepts or names than individual, variety, and genus.

[1] Origin, p. 426.

Though species has ceased to be a useful or necessary word, it does not follow that it did not render good service in its day, that it does not represent a phase of thought that must be passed through before it can safely be left behind. It is a word to which nothing tangible could ever have corresponded, but such words, if genuine, are really the most useful coins of our intellectual currency. How then can we know what species was, and what it signified? No authority on earth can tell us what species ought to mean. We have the word, and all we can do is to try to find out its origin and development. Now species is a mere translation of the Greek εἶδος, and the Greeks could originally by εἶδος have meant nothing but 'what is seen,' the appearance, the shape or figure of anything. As shapes or figures varied, as, for instance, some stones were red, others brown, and others black, these εἴδη or shapes came to be sets, sorts, classes of things. And as these εἴδη depended on their common outward appearance only, they were different from γένη, genera, kinds, which depended on a real community of origin. For logical purposes, therefore, nothing could be more convenient than these two terms, εἶδος and γένος, species and genus, comprehending, as they do, smaller and larger classes of things. Thus dwelling-houses would form a species, houses a genus; but dwelling-houses too might form a genus, and inns a species. In Sanskrit also we find *gâti*, genus, used in the same sense, while species is called âkr*i*ti, literally form. There is nothing to be said against this logical nomenclature, though it would not be difficult to suggest less ambiguous terms.

But when this nomenclature was transferred to

natural science, it caused at once considerable confusion of thought. If animals or plants can be proved to be descended from common parents, they should be called genus, or kith, or breed, but never species or class. The name of species is not wanted, unless we mean to use it for such vague concepts as red flowers or blue flowers. We may distinguish between genera and sub-genera, as we distinguish between brothers and cousins, but there is no room in nature for more than two concepts, namely, animals and plants possessing a common ancestor, and propagating among themselves, or animals and plants not possessing a common ancestor, and not propagating among themselves. There may be animals and plants the relationship of which cannot be proved as yet, but if we called these species, as distinct from genera, we should only give a name to our ignorance, and that is always a most dangerous proceeding. If Darwin's theory is right, there is an end of all species, or, at all events, there ought to be, for to speak of natural species, held together by a certain amount of resemblance, is nothing but inarticulate thought.

All therefore depends here on the word we use. If we know what we do and what we do not mean by species, the question, for instance, whether man constitutes a separate species, can never be asked. The only question is, whether it is possible to prove that the human breed shared common parents with any other animal breed? If that can be proved, then these two breeds form one breed, or one genus. If it cannot be proved, nothing must be asserted, though the possibility of connecting links need not be denied.

Is man a species?

That man is an animal requires no proof; that man is descended from another animal does require proof. All depends here, as elsewhere, on the words we use, and on the definitions we give of them. I call man an animal with the distinguishing mark of capacity for speech. I see that capacity in no other animal, and that is sufficient for the purpose of classification. I should call man, before he had formed his language, as I should call a baby, a mere animal, till I discovered in them the capacity for language. With all my opposition to Darwin, I have really gone far beyond the point where he stopped, for I have always treated man, not only as a descendant of an animal, but as to all intents and purposes an animal. No one can understand human nature, no one can form a true conception of the origin of language who does not clearly see that, for a time, every human individual, and therefore the ancestors of the human race themselves, were without language, without reason, and, so far, mere animals, till they made that small step of using the clamor concomitans of their social occupations as a clamor significans, and thus entered on that loop-line which, though at first diverging by an almost invisible angle only, carried them in the end to a destination which no speechless animal can ever reach.

If Darwin says that man was an animal, I answer No, man is an animal. If Darwin says man is descended from a monkey, again I answer No; not because it seemed an indignity, or, as some people thought, a heresy, but because the descent of the breed man from the breed monkey has never been proved. It was a mere imagination, arising from an inaccurate use of words. Drop species, as a used-up word, and all

becomes clear and simple. There are no species in nature, unless we foist them in. Our mistake of seeing in nature species, whether few or many, arose from the wrong use of the word species; our true intelligence of nature and of the purely genealogical relationship of all its productions returns as soon as we throw away the false word εἶδος, and replace it by the true word γένος, as soon as we use the right spectacles, the right words, the right concepts.

Definitions.

The advance of true philosophy depends here, as everywhere, on a true definition of our words. They want constant defining, refining, correcting, and even removal, till in the end the most perfect language will become the most perfect philosophy.

Definition and History of Words.

The best, perhaps the only sufficient definition of a word is its history, but to give a complete history of the words which form the staple of our philosophy is beyond our powers. There have been so many revolutions, so many breaks and long pauses, in the history of every word, that only under exceptionally favourable circumstances is it possible to unite once more the broken and scattered links of what was once a continuous chain. We must be satisfied therefore with discovering the meaning which the principal leaders of thought assigned to the classical term of our philosophy, and if we do that, it is wonderful to see how many clouds vanish at once from our mental horizon.

The meaning of à priori.

Let us take the question which forms one of the oldest as well as one of the latest problems of philosophy, namely, whether some of our knowledge is à posteriori, some à priori; that is

to say, whether all our knowledge is derived from experience, or whether we possess some knowledge which is not supplied to us by the senses alone. It seems a very simple question which everybody ought to be able to answer. We all possess the same information on the subject, and there is no bias, political, religious, or otherwise, to warp our judgment. And yet, as long as the world exists, or as long at least as men have thought about the world, there have been two parties standing face to face to each other, the one maintaining that we can possess no knowledge except what the senses deliver to us, the other asserting that we do possess some knowledge which the senses could never have delivered to us.

The chief reason why such a distinction was made was no doubt the peculiar quality observed in certain portions of our knowledge. Whatever our sensuous experience taught us could only be matter of fact, something actual, never something necessary or universally true. Yet our experience seems to supply us with certain truths which we not only assert as actual, but as necessary. Besides asserting, for instance, that a straight line from one house to the house opposite happens to be the shortest, we likewise maintain that it must be so.

À priori and à posteriori knowledge.

As therefore experience can never yield necessary or universal truth, and as some of our knowledge claims that character, it was concluded that some of our knowledge could not be derived from experience. While the former kind of knowledge, that derived from sensuous experience, was called à posteriori, the latter received the name of à priori knowledge, and these two ill-chosen names have become the source of

endless misunderstandings. Nothing could be said against the name à posteriori, if it is defined as knowledge following on the action of our senses. But the name à priori was supposed to imply a great deal more than a mere negation of à posteriori. It was explained as knowledge born with us, and therefore called innate, existing in our mind before we became conscious of anything. Other philosophers took it for knowledge slipped into our mind at a later time, but found there ready made, and therefore not to be questioned; while some authorities called it absolute knowledge, the truth of which is seen by intuition, and requires no further proof.

The amount of philosophical literature on the subject of innate ideas is enormous, yet the original question remains the same in all its simplicity, Do we or do we not know anything except what we see and hear and touch? or, as Locke put it, 'Is there nothing in the intellect that was not formerly in the senses?'

Before I proceed to show how the Science of Thought is able to deal with this old problem, it will be useful to look back to the last battle in which this controversy has been fought out in England. Though that battle itself is now almost forgotten, its issues still sway the destinies of philosophical thought in this country, nor have the two opposite parties been able since to send more skilful and powerful champions into the field than Mill on one side, Dr. Whewell and Sir W. Hamilton on the other. Mill's views in particular have exercised and continue to exercise so wide an influence among students of philosophy in England that it is difficult to treat the question of à priori

Mill and Whewell.

knowledge properly, without referring to the state in which he left it.

There are a few preliminary questions to be settled first, questions on which there is really no difference of opinion between Mill and his opponents, though Mill seemed to think that there was.

À priori knowledge is also à posteriori.

Truths à priori may perfectly well be called by that name, though they are first discovered by observation or experience. It is after they have been discovered that the difference between knowledge dependent on observation, and knowledge entirely independent of all observation, comes to be perceived. No one denies that the truth of the axiom, 'Two straight lines cannot enclose a space,' even if evident independently of experience, is also evident from experience[1]. I should even go a step further, and say that all à priori knowledge becomes first evident by experience, and may yet be called à priori, because its truth is perceived from the first moment when the meaning of a proposition is apprehended, and without any necessity for verifying it by repeated trials, as is requisite in the case of all other truths ascertained by observation.

À posteriori knowledge not always sensuous.

And while this small triumph, that all à priori truth is first realised à posteriori, will readily be allowed to Mill and his followers, they probably would not object to an equally easy triumph claimed by the other side, namely, that much of what is claimed by them as the result of sensuous experience, can never come within the cognisance of the senses

[1] Mill, Logic, ii. 5, 4.

at all. In the case of two straight lines not being able to enclose a space, actual ocular inspection is altogether unattainable. We never see a point, or a line, or a plane, much less two perfectly straight lines.

But these are both purely forensic arguments, which no true philosopher would condescend to use. If we are once driven to such devices, we might say that on this earth two straight lines, if continued all round the earth, would inevitably enclose a space, as the tropic of Cancer and the tropic of Capricorn enclose the tropical region. But that is not what is meant. If there can be no true plane on our globe, we are quite satisfied with imaginary planes, and we are quite willing to accept mental instead of ocular or real lines, without insisting that therefore certain qualities of straight lines must be known à priori, because they cannot be known à posteriori. Dr. Whewell, it is true, was unwilling to make that concession. 'It does not appear,' he wrote[1], 'how we can compare our ideas with the realities, since we know the realities only by our ideas.' But he had stronger arguments in store, and a case is weakened rather than strengthened by plausible arguments which may irritate, but can never convince.

Whewell's definition of à priori.

Dr. Whewell's real position was this, that an à priori or, better, a necessary truth is a proposition the negation of which is not only false, but inconceivable.

Mill's objections.

Mill attacked this definition by attacking the term inconceivable, and as a mere pleader he certainly seemed very successful. He

[1] Philosophy of Discovery, p. 289; Mill, Logic, ii. 5, 5.

found no difficulty in showing that in ever so many cases what seemed inconceivable to one generation has become perfectly conceivable to another. He instanced the Antipodes, the Copernican heliocentric hypothesis, the Newtonian doctrine of gravitation, rejected even by Leibniz, etc. He represents therefore the conceivableness or inconceivableness of such theories as purely accidental.

H. Spencer's compromise.

A later writer, who has since exercised a considerable influence on philosophic thought in England, Mr. Herbert Spencer, followed Mill in considering axioms our earliest inductions from experience, but he fell back on Dr. Whewell's test, declaring in almost the same words that 'the inconceivability of its negation is the test by which we ascertain whether a given belief invariably exists or not.' Still this leaves the real difficulty, pointed out by Mill, untouched, namely, that men differ as to what is conceivable or inconceivable. Mr. H. Spencer himself declares several things to be inconceivable which, as he well knows, have been considered as perfectly conceivable by some of the greatest thinkers the world has ever known. 'We cannot,' he says, 'for instance, by any effort, conceive the objects of thought as mere states of our mind, as not having an existence external to us;' and yet it is no secret that some of the greatest philosophers of the world have embraced that view as the only conceivable one. He likewise declares that he is unable to conceive gravitation acting through empty space, an inability which caused no small surprise to Mill[1]. In spite of all this, however, Mr. H. Spencer writes that 'though men

[1] Logic, ii. 7, 4.

have mistaken for inconceivable things some things which were not inconceivable, nevertheless the inability to conceive the negation of a thing may still be our best warrant for believing it.' Besides[1], universal and unchanging facts are, by the hypothesis, certain to establish beliefs of which the negations are inconceivable, whilst the others are not certain to do this, and if they do, subsequent facts will reverse their action. Mill, of course, could not be moved by such arguments which, as he well knew, did not touch the real nerve of the problem. He also remarked, and from his point of view very truly, that 'if our incapacity to conceive the negation of a given supposition is proof of its truth, because proving that our experience has hitherto been uniform in its favour, the real evidence for the supposition is not the inconceivableness, but the uniformity of experience.' 'Why,' he says in another place, 'should the truth be tested by the inconceivability, when we can go farther back for proof, namely, to experience itself?'

H. Spencer's later view.

Mr. Herbert Spencer seems to have felt the weight of this remark, if we may judge from his later writings, in which he substitutes for 'beliefs which invariably exist,' 'cognitions of which the predicates invariably exist along with their subjects[2].' In this he approaches very near to Professor Bain's view, who writes[3], 'We required concrete experience in the first instance to attain to the notion of whole and part; but the notion, once arrived at, implies that the whole is greater. In fact, we could not have the notion without an experience tantamount to this conclusion.' . . . When we have mastered the

[1] Logic, ii. 7, 2. [2] Ibid., ii. 7, 4.
[3] Ibid., ii. 5, 5.

notion of straightness, we have also mastered that aspect of it expressed by the affirmation that two straight lines cannot enclose a space.

Mill's Repetition of Experience.

Mill's position, however, remained unshaken, and this position has at least the great advantage of being clearly defined. According to him, all our knowledge is due to à posteriori or sensuous experience, and the difference between this and what people call à priori or apodictic knowledge is to him one of degree only. It is simply, he thinks, because we have seen the latter class of truths more frequently than the former that we have greater faith in it [1].

Three kinds of knowledge.

What has the Science of Thought, based as it is on the Science of Language, to say to this? It admits the fact that there are two kinds of knowledge, the one actual, the other necessary, and that there is a third kind, namely, the possible [2]. There is no difficulty about our knowledge of actual and possible things. Every one admits that it is taken from experience. But with regard to necessary or universal truths, the Science of Language shows that an important distinction has to be made.

Analytical and Synthetical Propositions.

Some of these so-called apodictic truths are simply analytical, or even tautological judgments, the name of the predicate being no more than a paraphrase of the name of the subject, as when we say, 'All islands are, or all

[1] Logic, ii. 5. 4.

[2] Kant calls these three kinds of Knowledge assertory, problematical, and apodictic, as conveying the actuality, possibility, or necessity of the propositions in which our knowledge is conveyed. See Kant's Critique of Pure Reason, translated by M. M., vol. ii. p. 71. Actuality would be a better rendering for Dasein than Existence..

islands must be, surrounded by water.' Here we learn nothing new. In other analytical propositions, such as 'All gold is, or must be, metal,' the name of the predicate tells us even less than the name of the subject, because the name and concept of the former is contained in the name and concept of the latter, and the name of gold has a fuller intension than that of metal. These judgments, which teach us nothing new, are called analytical, because we have simply to analyse the name of gold, to discover that it implies or connotes metal; we have simply to find the etymology of the name of island, in order to find that it means land surrounded by water. If we found that what we called an island was on one side connected with the mainland, we should at once change the name, and call it a peninsula or a promontory.

But if we say the straight line is and must be the shortest, the predicate does teach us something new, and yet this new piece of information is believed to be universally and necessarily true, nay, to follow by some kind of necessity from the nature of the subject. This class of judgments is called synthetical. How then do we get this kind, or rather this quality of knowledge which is conveyed in certain synthetical propositions? The matter, no doubt, comes to us from experience always. Without our eyes we could see no line, whether straight or crooked, whether short or long. But the apodictic form of this kind of knowledge cannot come from experience, because our senses, though they may tell us what is, what has been or what may be, can never tell us what must be.

Mill's facts.

Mill, as we saw, has but one explanation; the more frequently an observation is repeated, the stronger grows our faith, till

at last it seems to be beyond the reach of doubt. Here we have, first of all, to examine his facts. There is hardly an event which we observe more frequently and with greater regularity than the rising of the sun. Still, if our friends were to tell us that on any day the sun had failed to rise, though we should be staggered, we should nevertheless look out of window in order to verify their assertion. But if our friends were to tell us, 'Come out, there is a straight crossing from our door to the opposite door which is much longer than a crooked crossing,' or, 'Look at these two perfectly straight streets which enclose a square,' does Mill believe that we should stir to verify such statements? And yet we have looked far more frequently at the sun than at the crossings of our streets, or at any cross lines, whether straight or crooked. Mere frequency of observation, therefore, would hardly account for our ability to conceive that the sun some day may not rise, and our utter incapacity to imagine that a straight line should ever be longer than a crooked line between the same points. No one, I believe, would even measure a straight line in order to convince himself that it was really shorter than a crooked line. No one would appeal to the mere evidence of the senses, for he would feel that there was a higher kind of evidence to appeal to, even if it were no more than what Professor Bain describes so well by saying 'that the mastery of the notion of straightness is tantamount to the mastery of the truth that the straight line is the shortest.'

Still Professor Bain's explanation is after all but a repeated statement, slightly varied, of the fact that has to be explained. What we want to know is not

'that the mastery of the notion of straightness is tantamount to the mastery of the truth that the straight line is the shortest,' but why it should be so.

In order to answer that question we must go back once more to the original formation of our concepts and our words. We must remember that we know nothing except what we can name, or that all the materials of our knowledge are concept-names. What we know is never the thing, apart from us. Of that we cannot know anything. Our whole mental property consists in names, in nomina or notae rerum, not in res. Till we see this clearly, till we give up all hope of ever knowing the things by themselves, that is, the things as not known by us, we shall never come to an understanding with ourselves or with others. We think in names, never in things; that is the end of all true philosophy.

We know in names.

We must remember next, that every name was originally a proposition in which one attribute, as expressed by a root, was localised. 'Striking-here' was the beginning of striker or hammer; 'melting here' of snow; 'shining-here' of bright.

Names imply more than one attribute.

In all such names, however, as snow (melting-here), sun (shining-here), etc., ample room was left for other attributes, nay, some of these attributes, though not actually expressed by the name, were considered of so much consequence that their absence would render the employment of the name impossible. Nothing, for instance, would be called snow, simply because it melted, unless it was at the same time rain-water frozen in falling from the clouds to the earth.

Names depend on essential attributes.

Nothing would be called sun, simply because it was brilliant, unless it was at the same time a ball apparently rising every morning in the East, and setting every evening in the West, or, as we call it now, the centre of the solar system. Such attributes as would render the employment of certain names impossible, we call constant and essential attributes. They constitute the real intention of a word, and give us its more or less perfect definition[1]. As we know in names, and as all names depend on certain essential attributes, our knowledge and particularly its quality depend on these essential attributes as embodied in our names. And as by chosing a name we declare that we shall not name or know anything by it except what possesses certain constant and essential attributes, we are enabled to make certain so-called essential propositions, which approach very near to universal or apodictic propositions. We are enabled to say, for instance, not only that man is rational, but that he must be rational, because otherwise we should not call him man. This may be sneered at as 'merely nominal' knowledge, but we are never told where any but nominal knowledge is to be found.

Sometimes, however, not only did one name imply a number of essential attributes, but different names were formed and applied to the same thing, each attribute serving as the foundation of a new name. Such names might be predicated of each other just as adjectives are of substantives. We may say, for instance, that every soldier (lit. a man who receives pay) is a warrior, every warrior a combatant, every

[1] That definition must be progressive is admitted by Mill, Logic, iv. 4, 3.

combatant a campaigner, and so on. The character of the proposition remains the same as if we used an adjective.

Separable and inseparable attributes.

The question then arises, Why is it impossible to tear away certain predicates from their subjects, while others can easily be separated? We can easily separate from gold its being dug out, for some gold is found on the surface; we can also separate from it its glittering colour, for some ore of gold does anything but glitter when it is found. But we cannot separate from gold its being ductile. And why? Simply because we have chosen so to frame our name gold that anything not malleable cannot be called by it, but will have to be called by a different name. Thomas Aquinas knew this when he said, Verba sequuntur non modum essendi qui est in rebus, sed modum essendi secundum quod in cogitatione nostra sunt. We are responsible for our names. For instance, as our name for man implies the faculty of speech, we can say with apodictic certainty that every man must be able to speak. At first, the knowledge that man speaks rests on experience only, but our experience has been so organised in names that we have made the name 'man' inapplicable to anything that cannot speak. We are justified therefore in saying not only that 'all known men are able to speak,' but that 'all (whom we should call) men are able to speak.' When we use the word man, we mean no longer this or that individual, but any being which deserves the name of man, and of which we can predicate, not only what the name man implies etymologically, namely thought,

Essential attributes.

but likewise everything on which we have made that name to depend, namely life, speech, reason, and all the rest. What that being, called man, is, apart from our name, we do not know, nor shall we ever know more of it than what we have put into its different names. Supposing, therefore, we should meet with a man who could not speak, we should say, in the case of an infant, 'he can not yet speak;' or in the case of a man whose tongue had been paralysed, 'he can no longer speak;' or in the case of a person born deaf and dumb, 'he is a man who would have spoken, but for some physical malformation.' We should retain for all the name of man, but we should deny it to the gorilla, though the very image of a man, for the simple reason that the name man implies or connotes something which the gorilla does not possess, namely speech. So again, as we call the same x which we mean by man, by mortal also, we may say with apodictic certainty, 'All men are mortal.' If therefore we should hear of a man who, like Romulus, did not die, but was carried up to the gods in heaven, we should take away the name of man from him, because we use that name on condition only of the subject to which it is applied being mortal.

If we say that man is immortal, we enter into quite a different sphere of thought. Immortal here does not mean that a man does not die or that his body does not decay, but that there is something in him which does not altogether perish; it means, in fact, that his soul is immortal, though his body is mortal.

But taking mortal in its ordinary sense, what we mean by saying that man is mortal is that mortal is an attribute that cannot be torn away from man, and

which we may safely predicate of all men, because if they ceased to be mortal, they would cease to be called men.

But let us suppose that all men were white, or, that we at least, living on an island, had never seen any but white men. In that case the statement, 'all men are white,' would seem to be as true as 'all men are mortal.' And yet there is a great difference. We might accept white as an attribute of man, but we should hardly make the name of man dependent on it. If therefore we came to know beings, in every other respect like unto men, only their skin being black, we should call them black men, while we should never apply the name of man to them if, however like us in all other respects, they were not mortal or not endowed with the faculty of speech. Accidental attributes.

And here we see the true meaning of what logicians call essential attributes, but which I prefer to call nominal, using that word in the very opposite sense of that which scholastic philosophers assigned to it. By nominal attributes I mean those by which a name stands or falls. They constitute what logicians call the peculiar property of a thing. Take away, for instance, the nominal attribute four-footed, and the name of camel vanishes. But take away the attribute with two humps, and the name remains. What we find therefore as the result of our inquiry is this, that what I call nominal attributes cannot be separated from their subject, while all other attributes can. Names, no doubt, may be changed. Attributes which seemed to be essential may in time be dropt, and new essential attributes may be discovered. This is due to the

progress of science, though we should never forget that the true progress of science must always be realised in names. That being so, it will easily be understood, that all nominal propositions are liable to one and the same limitation to which all experience is liable, namely, 'so far as we know,' or 'in this present state of ours.' No conviction can well be stronger than that the sun will rise in the morning and set in the evening, yet even that proposition, as we saw, is liable to the limitation inherent in all human experience.

So far, therefore, the results obtained by the Science of Language would serve to confirm Mill's view, that all our knowledge is derived from our senses, and that the degree of assurance with which we predicate any attributes depends on our experience. In the case of accidental attributes, this admits of no doubt. In the case of nominal attributes, however, Mill is under the sway of the old illusion that 'names and their signification are entirely arbitrary[1],' while we have seen that nothing is less arbitrary than names and their signification. They embody the historical outcome of all the knowledge which the human race has accumulated by centuries of honest toil. To call a nominal proposition such as 'All men are rational,' arbitrary, seems to me like committing philosophical suicide. For all practical purposes such a proposition may be called almost apodictic and universal; for not only would the name of man have to be entirely surrendered, if we separated from it the attribute rational, but, in this case, all human reasoning would come to an end. Nor is there any excuse for saying

[1] Logic, i. 6, 1.

that such a proposition as 'All men are rational' is only analytical, for before we could form such an analytical proposition, we must have made the synthetical proposition that this man and that man, and, at last, that every man is rational. We cannot take out of a name anything beyond what we have put into it. Our making 'rational' a nominal attribute of man is in the first instance an act of synthesis, though not of arbitrary synthesis, for the very first reason why such a name as man (man-u-s) was framed at all was the wish to express our knowledge that 'here there is thought' (man-u-te).

Unconditional Truths.

We have now, from the point of view which we have reached, to approach the question, Can we form synthetical judgments without any limitation, or judgments professing to be necessarily and universally true, and depending for their truth, not on experience only, however often repeated, but on some authority higher than, or according to the usual, but rather objectionable terminology, prior to all experience?

Kant has shown that we find such knowledge, first, in what he calls the forms of sensuous intuition, Space and Time; and, secondly, in the categories of the understanding. If he had expressed himself in simpler language, few people would have hesitated to accept his conclusions.

Mathematics.

We all know that mathematical knowledge claims the character of necessity and universality, both in geometry and in arithmetic. In geometry such statements as the straight line is the shortest, two straight lines cannot enclose a space, or even two things cannot be in the same place at the same time, though they may be perceived

for the first time by the senses, possess a greater certainty than any number of repeated acts of experience could ever give us. They are more certain than that the sun will rise to-morrow. Space, therefore, and all that is connected with space, cannot be mere matter of experience. As all experience is possible in space only, space cannot be the result of experience; and though I can conceive all that fills space and is the result of experience, as gone, I can never conceive space as gone, because it is itself not the result of experience. And what applies to space applies to time. Time also is presupposed in every experience, because nothing could be the object of experience except as existing either at the same time or in succession, nor is it possible to imagine time as gone, though everything that has happened in time is gone. Arithmetical statements, being founded on counting successive units in time, are as certain as geometrical statements. Arithmetics may be called the Science of Time, as Geometry is the Science of Space.

If, with Kant, we call the geometrical statement, that the straight line is the shortest, a synthetical judgment à priori, we produce the impression, which is utterly erroneous, that such a judgment could be made prior to all experience. This shows the mischief which is constantly done by ill-chosen words. It is quite possible that two persons fastening a rope between two poles would see that the straighter they pull it, the shorter length of rope is required. They might then simply state an observation made by them for the first time, that this straight rope, as we now hold it, is the shortest. But if that fact is once known, it would not require any repetitions

to make it more certain in our eyes than any fact, however many times it may have been repeated.

It might be said, however, that 'shortest' is only a nominal attribute of 'straight line,' and in a certain sense, this is true. We should not call a line straight, unless it was also the shortest. But this is very different from saying that we should not call an island island, unless it was surrounded by water; or gold gold, unless it was a metal. Shortest cannot be called in logic the higher genus of straight, nor straight of shortest; and while, when we assert the fact that an island must be surrounded by water, we must in the end appeal to experience, we distinctly decline to appeal to experience in order to prove that the straight line is the shortest.

It is true, no doubt, that, like all truths, this class of apodictic truths also exists for us only after it has been named and clothed in language, and that some of these truths have the appearance of tautological truths. If straight line were expressed by linea directa, and short line by linea directa, the statement that linea directa = linea directa or directissima would seem to be a tautological repetition. Still, though straightness and shortness may be but two aspects of the same thing—straightness being in space what shortness is in time—and though they might have been named by the same word, they are two aspects, and to know that they are so, requires some kind of synthesis, if only a synthesis of intuition.

That synthesis of intuition, however, is not enough to give us knowledge, and whereas Kant tries to explain all that we know about space and time as the immediate result of sensuous intuition, I cannot admit any kind of knowledge that has not passed

through the phases of concept and name. There might be ever so many lines, straight, crooked, short, long, they would be nothing to us, if simply seen, and not conceived and named. Again, a hundred would never be a hundred by mere sight; we must count it and name it.

Attempts have sometimes been made to prove these geometrical and arithmetical truths, which are nothing if they are not self-evident, but all such proofs are simply tautological. There are no higher truths to which these truths could be referred, and by which they could be confirmed or disproved. We might attempt to prove that the straight line is the shortest by saying that if it ever went out of its way it would lose time, and therefore lose space. But this is no more than repeating that a straight line does not lose time or space, and is therefore what it is, namely the shortest. And by what higher truth could we prove that it is impossible for two straight lines to enclose a space? We see that it is so, even without using our eyes, but we cannot prove it by any independent standard. It has been said that every rectilinear figure must have as many angles as sides, and as a triangle is the simplest figure or mode of enclosing space by straight lines, no figure could have less than three sides. It has also been argued that space is a general abstract term, derived from triangles, quadrangles, and other figures, and that as none of these consists of less than three sides, space in general too cannot be enclosed by less than three sides. But all this is only repeating one and the same fact, a fact which is above proof, because it is the result of what we are ourselves, a necessity to which all experience must submit. If we call these

local and temporal intuitions à priori, we mean nothing innate or cognate, nothing mysterious, but simply the sine quâ non, the very essence, of all sensuous perception.

Categories of the understanding.

And what applies to these necessities of intuition, applies likewise to the necessities of our understanding. Here, too, we mean by à priori truth simply truth which cannot be explained à posteriori. Experience, like a quarrel, requires two, a receiver and something that is received. Now we receive what is given on our own conditions, and what these conditions are we can only discover by separating in our knowledge what can be and what cannot be the result of experience. If the qualities of space and time, as we saw, cannot be the result of experience, because without these two forms, no experience would be possible, neither can the categories of our understanding, for without them we should understand nothing.

Causality.

The most general and the most important of these categories is that of Causality, or of sufficient reason, which was expressed in scholastic Latin by the well-known maxim, Nihil est sine ratione cur potius sit quam non sit. That this cannot be a conviction acquired and strengthened by experience is best proved by the fact that our creation of the very first object, or our intuition of an objective world, would be impossible without it. All that is given us consists in affections of the senses. It is we who at once, and without any wish or will of our own, change these affections into objects by which they are supposed to be caused. We do this in the very act of naming. The sensation is there, say of bitterness. As soon as we become

conscious of it, we say 'it bites,' and the it is the object which we postulate and create for ourselves.

And what applies to the first acts of our mind, applies to every subsequent act. As we believed that everything must be in space (side by side) and in time (one after another), so we believe that there can be no break or void anywhere, but that everything must be caused and causing. In this general postulate we cannot be wrong, however wrong we may be in assigning certain causes to certain events.

We see a dewdrop in the morning, and after a time we see that it has vanished. We do not know how, but whatever torture we may apply to our mind, we can never bring ourselves to say that it vanished without a cause. The wind may have swept it away, the sun may have dried it, a bird may have drunk it, but something must have happened to account for the change. What is the true cause, depends on observation. The sun may have risen, and the dewdrop may have vanished, but that need not be more than a succession in time, a post hoc, not a propter hoc. The same applies to the wind and the bird. But as soon as our senses tell us that there was no bird, and that there was no wind, nor any other agent to produce the change, then the post hoc of the vanishing of the dew and the sun's rays becomes to a human being at least a propter hoc, and the craving for causality is satisfied.

But even if we could not determine which was the real cause of the vanishing of the dew, we should nevertheless postulate the existence of a cause. We cannot yet account for the changes of weather, but we are as convinced that there is a cause for them as that the sun is the cause of daylight. To say that

all this is nothing but a mental habit, is to admit that our mind is capable of forming such habits because it is what it is, and not a mere mirror. Why should our mind not be satisfied with the post hoc? The world would be very orderly, if everything happened in succession, without any causal link. Whence, then, that craving for something more than the senses give us, whence the concept of a propter hoc, whence the belief in cause and effect? Experience never tells us of a cause; our mind, even in spite of experience, always postulates a cause. According to what rules of reasoning, then, are we to say that cause is the result of experience?

If anywhere the influence of what Mill calls intellectual or even moral bias may be seen, it is here. Mill's school prides itself on having explained ever so many most complicated processes of the mind by association, and who would deny the excellent work which that school has done? But having found that this key could open so many secret drawers, Mill and his followers seem to consider it almost as an insult, as a reflection on the whole system of their philosophy, if a single drawer should be left which they cannot open. In this respect they differ from Kant and his followers, who, though gladly availing themselves of the help which experience and association furnish for the solution of mental problems, point to the fact that experience cannot be explained by experience alone, but requires some, though very few, antecedents.

The other Categories.

It has become the fashion, even among some of Kant's most loyal followers, to treat the other categories as of less consequence than that of causality, or to surrender

them altogether as à priori forms of thought. Now it is quite true that the category of causality is the most important among categories, just as that of οὐσία is among Aristotle's, but I do not see how we can account for our intellectual activity without presupposing the other categories likewise.

Whatever is given us in our sensation cannot be conceived and cannot be named except as one, many, or all. Anything that does not submit to one of these categories has no existence for us. Here we have Kant's categories of Quantity.

Again, if we cannot conceive what is given us except as either cause and effect, neither can we conceive anything except as either substance or accident, or as acting reciprocally. Anything which does not fall under one of these relations, is outside our ken altogether. Here we have Kant's categories of Relation.

Once more, we cannot conceive what is given us except as either actual, possible, or necessary. Anything outside this threefold purview is nowhere, so far as we are concerned. These are Kant's categories of Modality.

Lastly, we cannot form any proposition with regard to the objects that fall under these nine categories, except by affirmation, negation, or limitation—Kant's categories of Quality.

Whatever else these twelve conditions may be, whether they be necessary forms of all existence or not, they certainly are necessary forms of everything that is to be thought and named by us, of everything which we make objective to ourselves; and therefore they too, like the forms of sensuous intuitions, must be called à priori, or not only à priori, but eternal.

Mill thinks he can reduce all these predicates to four, Existence, Order in Place, Order in Time, and Resemblance. Existence, no doubt, is the most important of all categories, which Aristotle puts first, and Schopenhauer, under the name of causality, first and last. Order in Place and Time would correspond to Kant's forms of sensuous intuition, while in predicating resemblance we are simply grouping things as one, many, or all (Kant's categories of quantity), which, according to Mill's followers, is the foundation of comparison and indirectly of all reasoning[1].

Mill's Categories.

Causation, which Mill at first mentions as a fifth predicate, is afterwards treated by him as not different from what he calls order of time[2].

The question how we came to predicate these four or five categories, is never asked by Mill, but he evidently thinks that all these predicates, like everything we know, are the result of repeated experience. And yet can we imagine any experience unless to a recipient who can distinguish between one and many, subject and predicate, cause and effect? If, as Mill declares, there is really no difference in our sensations of substances and predicates, why then should our sensations ever grow out of this chaos? Why should we begin to count, which no pure mirror does? Why should we postulate a substance, which we see nowhere? Why should we be convinced that causality, and not only succession in time, holds the whole of our experience together, considering that mere experience never tells us that it does?

We have thus seen that the Science of Thought,

[1] On the true meaning of resemblance, see Noiré, Logos, p. 72.

[2] Logic, iii. 24, 1.

supported, as it is, by the Science of Language, solves the riddle of à priori knowledge in a way that ought to satisfy all parties. It shows that all our propositions refer to names, that is, to what we know of things, not to what things are, as not known by us. It likewise shows that our first synthetical judgments mean no more than that two different names are applicable to the same thing, as, for instance, 'this man speaks,' but that, after a time, certain names are made so dependent on others that nothing, for instance, is to be called man that does not speak. This is the highest degree of certainty that can be attained from experience, and if I call that certainty nominal, and the attributes to which it refers nominal, not essential, it is because I think I have shown that nominal is the last and highest form which our knowledge can attain. Yet all this knowledge is à posteriori, and, if analysed into its component parts, cannot in the end appeal to any certainty higher than what is supplied by the senses. The only judgments which are not à posteriori, though suggested at first by the senses also, are the geometrical and arithmetical propositions, the law of general causality, and such deductions as can be made from the categories of our mind, as, for instance, Everything must be either one, or many, or all, must be real, possible, or necessary, must be affirmed, or denied, or limited. For the truth of these statements we have not to appeal in the end to experience, on the contrary, all experience depends on them, and in this sense only may we call them à priori, necessary, universal truths.

I can hardly doubt that, with these limitations, Mill himself would have accepted what we call à

priori truths, for what he has to say against the infallible character of these truths, strikes me as opposed to the principles of his own philosophy. Mill appeals to what must for ever be outside the limits of our experience, in order to show that our à priori truths which, though confirmed by all experience, we consider true, independent of all experience, may, after all, not be true. Now here I would remark, once for all, that everything we are thinking must be thought of as within the limits of our mind and our senses. What is true within that sphere, limited though it be, is to us, as limited beings, absolutely true. To say that the shortness of a straight line may not prevail outside the solar system, conveys to me no meaning at all. To say that there may be a world in which the law of causation does not assert itself, seems to me no more than to say that there may be a madhouse. We may safely leave such speculations to the believers in four dimensions of space. I know that there is a horizon of our knowledge, but I know equally well that, being what we are, we cannot jump over it, nor even suggest such doubts as Mill suggests.

Mill's transcendent views.

I believe that Mill never understood the small demands which Kant really made in claiming for the forms of intuition and for the categories of the understanding the name of à priori. Kant ascribed no mysterious character to them, he did not commit himself to any opinion as to their origin. He simply said, Here they are with a character of their own, which is different from that of all our other experience. That the same thing cannot be in two places at the same time, that two things cannot be

in the same place at the same time, that the whole is greater than a part, that two and two make four, that everything must have a cause—all these are facts commanding assent such as no other facts of mere experience, not even the daily rising of the sun, can command. No doubt, if we say with Hume, that experience can never give us necessary truth, and that the law of causality rests on experience, we can only conclude with him that therefore the law of causality is not a necessary truth. But in that case we must give up all reasoning, including Hume's own reasoning against causality.

I admit that the name à priori, if taken in its etymological sense, is misleading, and I can quite understand why this name, as well as innate, cognate, absolute, transcendent, should excite the intellectual, and even the moral wrath of the empirical school. It seems to them as if, by admitting anything beyond experience, anything à priori, we attempted to raise human nature beyond its proper level, wishing at the same time to open an inlet for other truths which claim a mysterious character and a super-human authority.

But Kant is the very last person to encourage such philosophical or theological legerdemain. On the contrary, through the whole of his philosophy he insists most strongly that these à priori forms or antecedent conditions of knowledge have no authority whatever 'except in and for experience.' They must not be applied to anything except what the senses supply, and to use the category of causality, for instance, in order to establish the existence of God is, according to Kant, a philosophical blunder.

If only we could always remember the first in-

tentions of our words, many philosophical difficulties would vanish. I know in Greek (οἶδα) meant originally, I have seen, and therefore I know. To apply such a word to our knowledge of causes, forces, atoms, and faculties would be a solecism, to apply it to God would be self-contradictory. We want another word, which should mean I have not seen and yet I know, and that is—faith. Definition.

'We have but faith, we cannot know,
For knowledge is of things we see.'

Everywhere we are led to the same conclusion: if we want to think correctly, if we have any belief left in philosophy, we must look, first of all, to our names. If we think in names, our philosophy ought to be a constant Katharsis of names. In the ordinary business of life we cannot help taking our words, like our coins, at their current value, but when higher interests are at stake we cannot be too much on our guard against spurious or debased coins. When treating in our last chapter of propositions, we followed Euler's example in representing names by circles. But although this is a convenient process, it would be the greatest mistake to imagine that the intension of every name is really so complete, so perfectly defined as the planes enclosed by the peripheries of those circles. The outline of the extension of most of our names is very jagged and uncertain, the weight of their intension varies as they pass from mouth to mouth, till an accurate process of definition has taken place, and some authoritative declaration been made as to what is inside and what is outside a certain name.

Any student of language who knows in what haphazard way words are formed and afterwards made

to do service for anything that the human mind requires, will not be surprised at the perfect maze in which even the best thinkers find themselves before they come to understand one another. How often do we hear people say, 'Matter means this, and Mind means that,' as if either Matter or Mind had any inherent meaning, or as if they could mean anything except what we ourselves or our betters wish them to mean. The whole of philosophy may be called a struggle between the new and the old meanings of words, and much philosophical controversy would vanish, if disputants would only condescend to define their words. But to be asked to define the meaning of words, has almost come to be considered as an insult. Nor is it an easy matter to do so at a moment's notice. But this, so far from being a reason why it should not be done, serves only to show how necessary it is that it should be done. In many cases much would be gained if disputants, even without giving a full definition of a word, would tell us at least to which of the Aristotelian categories they wish to refer it. I pointed out before (p. 248), how much misapprehension was caused by Mill when explaining Matter as 'the permanent possibility of sensation,' Mind as 'the permanent possibility of feeling.' Here, first of all, an artificial distinction is made between sensation and feeling, sensation being used in a passive, feeling in an active sense. It would have been easy and certainly clearer, if Mill had defined Matter as the permanent possibility of being felt, Mind as the permanent possibility of feeling. However, as Mill explains what he means by sensation on one side and feeling on the other, that might pass. The real mischief lies in the use of the

Necessity of definition.

word possibility. Is that word used under the category of *οὐσία*, or not? If it is, then why not say, 'Matter is what permanently makes sensation possible, Mind what permanently makes feeling possible;' or, better still, 'Matter is what can be permanently felt, Mind what can permanently feel.' This does not sound so grand, but it gives all that is contained in Mill's words, and gives it in a clear form.

I feel the same strong objection to Schopenhauer's use of the word Will. In no language is Will anything but the state or act of something else. It is predicate, not subject. Why then use that word to signify what is meant for the subject of all subjects, dependent on nothing, predicable of nothing? I do not contest the right of philosophers to assign to all words a new meaning, but to move a word from one category into another is a much more doubtful step, and, if taken at all, it should be taken with full notice, or with the sanction of that popular consensus against which there is no appeal. As Schopenhauer's Will is clearly taken from the Vedânta philosophy, why not retain Brahman, whether as a neuter or as a masculine, a word which some Sanskrit scholars have translated by Will, or, better still, Âtman, Self?

The odour of words.

It cannot be denied, however, that there is something in certain words which defies definition. There is a kind of odour about words which varies at different periods. It becomes most clearly perceptible when we compare the meaning which the same word assumes in cognate languages. Whoever has attempted translation from German into English, or from English into German, will know what I mean. I do not think of such

words only as wife and Weib, bride and Braut, maid and Magd or Mädchen. I mean words which change slowly from generation to generation till they come to mean almost the opposite of what they were originally meant to mean.

No title could be more honourable at first than was that of Sophistes. It was applied to the greatest thinkers, such as Sokrates and Plato, nay, it was not considered irreverent to apply it to the Creator of the Universe. Afterwards it sank in value, because applied to men who cared neither for truth nor for wisdom, but only for victory, till to be called a sophist became almost an insult. Again, what name could be more creditable in its original acceptation than that of Sceptic? It meant thoughtful, reflective, and was a name given to philosophers who carefully looked at all the bearings of a case before they ventured to pronounce a positive opinion. And now a sceptic is almost a term of reproach, very much like heretic, a word which likewise began by conveying what was most honourable, namely, a power to choose between right and wrong, till it was stamped with the meaning of choosing from sheer perversity what the majority holds to be wrong.

As all philosophy has to deal, first of all, with words, there is no salvation for philosophy except definition, that is, criticism of words. The very word philosophy may serve as an instance. How often do we read in German works on philosophy that men like Bacon and Newton, or in modern times Lyell and Darwin, are not philosophers at all. Schelling's joke about 'philosophical instruments' is trotted out again and again. The fact is that since the days of Descartes, and still more, since the days of Kant,

philosophy in Germany has been used chiefly in the sense of Erkenntniss-theorie, knowledge of knowledge, ἐπιστήμη τῆς ἐπιστήμης. There is much to be said for defining philosophy in that sense, because whatever exists for us can only exist as perceived, known, and named by us, and therefore the foundation of all philosophy must be the exploration of the foundation on which all knowledge rests. It is the prima philosophia, and, according to some, the ultima philosophia likewise. As soon as philosophy is so defined, all the useless squabbles, whether, for instance, Auguste Comte and Mr. Herbert Spencer deserve to be called philosophers, would cease at once. The name might be good enough for Kant, 'who extracts sunbeams out of cucumbers,' but, if applicable to Kant, my friend Mr. Shadworth Hodgson would, I fear, reject it with scorn. Still there remains a lurking love for the name. People do not like to part with it, though it seems to have been so much degraded. A few students of mind-stuff might say, 'If that is your definition of philosophy, we should rather not be called philosophers,' but others would rather retain it, though with a new definition. Hence so many fights about the odour of a word, even when people care very little for the carcass from which it arises.

Even Mill, with all his contempt for merely verbal knowledge, is quite aware how many of our fallacies are due to the nature of names. How is it that he has never asked himself, whether true knowledge can be due to any other cause? If we fall by our legs, do we not also walk by our legs?

Verbal Fallacies.

And there are fallacies about fallacies too, and Mill seems to me by no means free from them. He constantly uses words as if they could have one meaning

only, whereas some have no longer any meaning at all.

Empty space.

When he says, for instance, that it is a fallacy to say that gravitation cannot act through empty space, the fallacy is his quite as much as his opponents'. Both he and his opponents take empty space as if it were a well-defined word which everybody accepts in the same sense. But empty space is so far from being a well-defined word that it may possibly turn out to be self-contradictory. Empty space meant originally no more than an empty room, a space emptied of all its furniture. After a time, when it became possible to exhaust the air, a space thus exhausted was called empty space, or a vacuum. But vacuum meant no more than without air, and it was simply a wrong induction to conclude that a space empty of air could not be pervaded by the vibrations of light or other invisible media[1]. Lastly, when empty space was defined, as it was as early as the days of Aristotle, as space without matter, a new element of uncertainty was introduced by the undefined name of matter. There is nothing in our senses or in our reason to authorise us ever to speak of space without matter, but if we once form such a concept, we have a right to deny what is contradictory, namely, that in a space where there is no matter, matter should act[2], just as we can draw a formal conclusion that 'a ghost being something which cannot be seen,

[1] Logic, p. 498 b.

[2] Newton himself declared that it was to him inconceivable that inanimate brute matter should, without the mediation of something which is not material, operate upon and affect other matter without mutual contact.

therefore it is impossible that a ghost should be seen, for, if seen, it would cease to be what we call ghost.'

We must in all our mental acts remain within the limits of our own senses, our own concepts, our own names. We cannot, as Mill constantly attempts to do, live at the same time as a chrysalis and soar about as a butterfly. With us matter cannot think, with us space cannot be empty, with us two lines cannot enclose a space, with us there cannot be a shorter line than the straight. If Mill says that all this may be merely 'limitations of our very limited minds, and not in nature at all' (Logic, v. 3, 3), it is difficult to see what this has to do with us. What is strange is that a philosopher of Mill's calibre should appeal to these superhuman realms of transcendental possibilities, of which even Kant would not dare either to assert or to deny anything. He seems in this respect more metaphysical than the most metaphysical of German metaphysicians. And that is no doubt the reason why he does not apprehend what Kant means by à priori forms of sense and thought. They are the forms without which we, poor mortals, can neither see nor think, and which to us are therefore what is called à priori, i.e. beyond the reach of à posteriori doubt. There may be worlds where space has four dimensions or none at all, where nothing is either substance or predicate, cause or effect, one or many, where everything that is possible is real, and everything that is real is necessary. But if that is so, it would seem to follow all the more that what subjects our present world to the limitations of space, time, and the so-called categories, must be our fault, whether we like it or not, must be

inherent in our subjective nature, and thus become an irrevocable law of our objective world.

It has been asked, suppose that all were chaos, or that we were suddenly transferred to the eve of the first day of creation, how would the law of causality apply? It would apply in two ways. Our mind would postulate order in chaos, and if it could discover none, the law would still be proved by the breach. We have only to abolish within ourselves the law of causality, and we are at once in full chaos and on the eve of the first day of creation.

Matter.

Mill declares in one place (Logic, v. 3, 3) that it is a mere fallacy to say that matter cannot think. Here again he ought to define, first of all, what he means by matter, and, according to his definition, it may or may not be a fallacy to say that matter cannot think. If we say that matter cannot think, we do not say so because we cannot conceive thought to be annexed to any arrangement of material particles. That is not our reason, for it would, on the contrary, be easy to answer that our experience never shows us thought except as annexed to some arrangement of material particles[1]. The reason why we are justified in saying, 'matter cannot think,' is our having in our language and thought separated matter from thought, our having called and conceived what is without thought matter, and what is without matter thought. Having done this, we are as certain that our matter cannot think as that A = A and not = B.

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[1] 'Nam ex eo quod considerari potest cogitatio sine consideratione corporis, inferre volunt non esse opus corporis cogitantis.' Hobbes, Logica, i. 3, 4.

Definition is therefore the only remedy which the Science of Thought can prescribe. That thought is often hide-bound in language, that its history is a constant struggle against effete words, that the record of its sufferings and diseases may be read in all mythologies, in all religions, and in all philosophies, all this is well known by this time. All honest philosophers have felt it, and though they have soared high on the pinions of language, yet even in their highest flights their wings have always been a heavy weight. It is in the development of thought as in every other development: the present suffers from the past, and the future struggles hard in escaping from the present. Thought is a constant birth, and language a constant cry of agony: yet there is always new thought springing from old thought, and living words rising from the ashes of dead words. For better or for worse, language and thought are inseparably united: a divorce means destruction to both.

We saw how dear Bishop Berkeley forswore the use of words, but could forswear them in words only. Other philosophers, feeling how frail were the wings which their fathers had fashioned for them to fly, like Ikaros, toward the light of truth, were bold enough to think of throwing them away and of forging a new language for themselves. But they found it was more than mortal hands could achieve. Nevertheless, what Leibniz suggested, and what Bishop Wilkins carried out to a certain extent, a completely new philosophical language, would be the best cure for that malady of language which has afflicted our race as long as we know it, though even that could only give temporary relief. Aegri mor-

tales is true here as elsewhere. Still we must not despair. As in medicine, so in philosophy, a right diagnosis of the disease is something. To know that we are ailing and why we are ailing often suggests the remedy. If we keep aloof from indigestible food, and observe the general laws of health, we may live and work to some purpose. If we keep aloof from ill-defined words, and observe the general laws of thought, we may think and speak to some purpose. The Science of Language has shown us the wonderful structure of the organ of thought—the bones, the muscles, the nerves in grammar and dictionary. The Science of Thought is to the Science of Language what Biology is to Anatomy. It shows us the purpose of the organ, its work, its life. The two are really one. Yet in the progress of human knowledge the firm foundation had to be laid by the Science of Language, before it was possible to erect on it the new edifice of the Science of Thought, or to indicate at least how it might be carried out by those who will come after us.

APPENDIX.

THE FUNDAMENTAL CONCEPTS EXPRESSED BY SANSKRIT ROOTS.

Preliminary Remarks.

The Sanskrit roots in the following list have been given generally in that form in which we find them quoted by Hindu grammarians, leaving out the indicatory letters. Instead of the vowel *ri*, I have in writing the roots, employed the letter Æ, though without changing its place in the alphabet. The letter Æ has been used in roots which Hindu grammarians write with *rî*, that is in roots the vowel of which varies between ar, îr, ûr, and sometimes *ri*. In roots in which the nasal is variable, I have written it with a small letter, and have not allowed the nasal to count in the alphabetical arrangement of roots. Where the nasal is permanent, it has been written with a capital letter, and counts.

I have not added a final a to roots ending in consonants.

Having always defined a root as the last residuum of grammatical analysis, as that which remains after everything that can be shown to be the result of the formative processes of language has been removed, I naturally prefer the form in which Sanskrit grammarians have handed down their roots to us to that which some European scholars have lately adopted. From their point of view, I do not deny that much is to be said for calling, for instance, the root in pra-búdhi (Rv. viii, 27, 19), at the awakening, in buddhás, awakened, in bódhati, he knows, and in bauddha, a follower of Buddha, BaUDH, or even BeUDH, and not BUDH. We then say that BaUDH is weakened, under certain circumstances, not that BUDH is strengthened. Consistency, it has been said, would require us, if we give BUDH as the radical form, to give PT as the radical form, instead of PAT, because in several cases where BaUDH appears as BUDH, PAT appears as PT, provided it be pronounceable. All this, and a great deal more, is perfectly true. But, on the other hand, if we mean by root that which can be reduced no further, BaUDH cannot claim that name, for BaUDH contains one element that can be removed, without destroying the life of the root. That element is not only moveable, but seems to have a definite grammatical purpose. Grammarians may differ about the original purpose of Guṇa, which takes place when the accent falls on the radical syllable. It may be purely mechanical, but it may also, at least in the beginning, have been intentional. Certain suffixes, still asserting their modificatory character, may have retained the accent, as a sign of that character; others, having ceased to be felt as modificatory, may have

allowed it to fall back on the radical syllable. That accent, the udâtta, whether as pitch or as stress, may have provoked the strengthening of the radical vowel. Hence:—

Pres. VáID-mi, VáIT-si, VáIT-ti, but VID-más, VIT-thá, VID-ánti.

Perf. VáID-a (οἶδα), VáIT-tha (οἶσ-θα), VáID-a (οἶδε), but VID-má (ἴδ-μεν), VID-á, VID-úḥ.

In all this we seem to see cause and effect, the accent, if falling on the radical vowel, producing Guṇa, but leaving the radical vowel unchanged, if on the termination.

We have a still clearer instance in the formation of the degrees of comparison. Both comparatives and superlatives in ṭyas and ish*ṭha*, for some reason which it is difficult to explain, throw the accent on the first syllable. Thus from kship-rá, quick, we have kshép-ṭyas, kshép-ish*ṭha*; from ur-ú, wide, vár-ṭyas, vár-ish*ṭha*, etc. The same rule obtains in Greek. The suffixes ra and u do not require the accent invariably, for we have gr*ádh*-ra (not gárdh-ra), greedy, by the side of kship-rá, quick; we have vás-u, good, by the side of ur-ú, wide. But there is no exception with regard to the accent of comparatives and superlatives (unless we think of *gyesh*ṭhá), and it is but natural therefore to ascribe the strengthening of the radical vowel to one and the same cause, the accent on the first, as required by the suffixes ṭyas and ish*ṭha*.

I do not say that these arguments are unanswerable; what arguments are, when we have to deal with the immense variability of language? All I maintain is that, according to our own definition of what a root is, namely that which resists further analysis, but, at the same time, is pronounceable, KSHIP has a better right to be called root than KSHaIP.

Those who maintain that the palatalisation of initial gutturals was due to the influence of a following a, that is, e, would find it difficult to account for such forms as kopayati by the side of kup, for *k*up and *k*opati, except, of course, by analogy.

I have nothing to say against another argument, namely that those who give BUDH as the most primitive form of the root, should likewise give K*RI*, and not KAR. But if Boehtlingk and Roth in their great Dictionary prefer to write these roots as KAR, everybody surely understands why they do so, and if we understand each other, why not allow a certain amount of individual freedom? I prefer to write such roots which may represent their vowel by *ri* or ar, with Ṛ; for instance, KṚ, BHṚ, etc., but as this is sometimes troublesome in printing, I am quite satisfied with either *ri* or ar. Granted that those who write BUDH, should write K*RI*, what about such roots as RABH? I think it was Lepsius who first pointed out that nasalisation is in every respect the same as Guṇa, namely a strengthening of the root under certain circumstances. Those therefore who write BaUDH and KAR, should likewise write RAMBH, because, under certain conditions, this and other roots are nasalised, e.g. Aor. arambhi, Caus. â-rambhayati. They should write even BANDH, because this root also, as well as others of the same class, though it forms the Pass. badh-yáte, p. p. baddhá*ḥ*, requires the nasal in the fut. bhantsyáti, where RABH would have no nasal. Nor do I see why TUD should be treated differently from BUDH, for, though not in the special tenses, it takes Guṇa in several of the general tenses, such as tot-syáti, tottá, and even Vṛiddhi in átaut-sit. There are advantages and disadvantages on both sides.

And what applies to verbs, applies to nouns. Where we have nouns with two bases, Aṅga and Pada, or with three bases, Aṅga, Pada, and Bha, I always prefer to look upon the Pada-base as the most primitive; but if others prefer to begin with either the Aṅga or the Bha base, they might, no doubt, produce some arguments in favour of their views. My reason for preferring the Pada-base is that it appears in composition, at the beginning, in the middle, and at the end, e. g. pratyag-bhâva, mat-pitṛi-dhanam, su-hṛid, su-manas. We can understand that the terminations which have no accent (sarvanâmasthâna) might allow the base to be strengthened, as we see in pratyañk-as, hṛindi, manâṁsi, but we should hardly admit an original hṛind, manâṁs, or amp, because we find in the Aṅga-cases hṛindi, manâṁsi, and even svâmpi, possessed of good water, scil. tadâgâni[1]. Is there any reason why a root DVESH, if there is such a root, should as a noun be shortened to dvish (devadviṭ), or MARDH to mṛidh, or YUNAG to yuj (asva-yuj)? And, if there is not, can the strengthening of yuj in the plur. neut. to yuñji be regarded as anything but the result of the same almost mechanical process which changes hṛid to hṛindi?

What we have to remember when dealing with roots is that many of them exist under different forms. Some look upon these various forms as derived from one typical form, and as changed for a definite grammatical purpose. Others look upon these varieties as remnants of dialectic growth, though they admit that, after a time, such varieties were used more and more consistently for different grammatical purposes. Both may be right, though I prefer the latter view as the more comprehensive.

Roots like DHÂ appear weakened as DHÎ (*θη* and *θε*).

Roots like STHÂ appear weakened as STHÎ (*στη* and *στα*).

Roots like DÂ appear weakened as DÎ (*δω* and *δο*).

But, if certain scholars prefer it, and if they think they can explain the change of i to â, instead of â to i, they may look upon DHÎ, STHÎ, and DÎ as strengthened so as to become DHÂ, STHÂ, and DÂ, and in Greek on *θε*, *στα*, and *δο* as having been raised to *θη*, *στη*(*ᾱ*), and *δω*.

Other roots admit both of weakening and strengthening. Thus PAT is raised to PÂT and weakened to PT; AG is raised to ÂG, and weakened to G; SV-AD is raised to SVÂD, and weakened to SÛD. Now, if corresponding to these three classes we have in Greek *πέτ-ομαι*, raised to *ποτ-ή*, and weakened to *πτ-έσθαι*; *ἄγ-ω*, raised to (*κυν-*)*ηγ-ός*, and shortened to *ὄ-γ-μος* (where *ὄ* is supposed to be not radical, but prosthetic); *ὄζω*, raised to *ὄδ-ωδ-α*, and weakened to *ὀ-δ-μή* (provided that here also the *o* is prosthetic), is it not preferable to use the middle form PAT, *πετ*, AG, *ἀγ*, AD, *ὀδ*, instead of either PÂT or PT, etc.?

If, however, DHI is a variety of DHÂ, STHI of STHÂ, there is this difference between this variation, and another, such as STHÂ and STHU, namely that STHU never replaces STHÂ to produce certain grammatical forms. We want STHU in order to explain derivatives such as sthûrá, sthávira, etc., but we never see it in such forms as sthitá, sthîyate, etc. The same applies to such parallel roots as DRÂ, DRU, SNÂ, SNU (ghṛita-snâ and ghṛita-snu, bathed in ghṛita, i. e. dropping ghṛita, Germ. triefend). Still this is no more than an historical fact, and there is no principle involved why STHU should not have been adapted to certain grammatical purposes quite

[1] Sanskrit Grammar, § 211.

as much as STHI. In fact we see a beginning in SPHÂ and SPHÎ, where we have the causative formed from SPHU, scil. sphâvayati and not sphâyayati; likewise in derivatives such as visphâra and visphâla, where the root has become SPHUR and SPHUL[1]. Although, therefore, we may distinguish grammatical varieties of the same root from parallel roots, we must remember that the former were probably the result of a grammatical selection applied to the latter.

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1. Dig.

KHAN and KHÂ (skan).

2. Plat, Weave, Sew, Bind.

UmBH (string together), KÆnT (spin), KLATH (twist, roll), GUmPH, GRAnTH, *K*ÆRT (bind), DÂ (di), DÆRBH, DÆ*m*H, NAH (NABH), PA*S*, nom., BAnDH, VABH, VÂ (vi), SÂ (si), SÎV (syû), SEV (?).

3. Crush, Pound, Destroy, Waste, Rub, Smoothe.

KRAKSH, KSHUnD, GHA*TT*, GHÆRSH, *K*ARV (chew), *K*ÛR*N*, *G*UR, *G*ÛRV, *G*Æ, TÆ*m*H, PI*m*SH, PUTH, MÆ, MÆRKSH, MÆ*K*, MÆ*ñG*, MÆ*D*, MÆ*N*, MÆD, MÆDH, MÆ*S*, MÆRSH, MRAD, MRIT, MRU*K*, MRE*D*, MLÂ (fade), MLIT, MLU*K*, MLUP, VRAnD, VLÎ, *S*Æ, STÆRH.

4. Sharpen.

KSHNU, *K*UD (impel), TI*G*, *S*Â (*si*), *S*ÂN.

5. Smear, Colour, Knead, Harden.

A*ñG*, KRU, nom. (harsh), KRUDH, TA*ñK* (coagulate), DIH, RA*ñG*, RIP, RÛKSH (harsh), LA*GG* (be ashamed), LImP.

6. Scratch.

KASH, KÆRSH (plough), *K*HUR, RAD, RIKH, LIKH (write).

7. Bite, Eat.

A*S*, GHAS, *G*AKSH, DA*mS*.

8. Divide, Share, Eat.

A*mS* (share, attain), A*S* (eat), KRÎ (buy), KSHAD, DA*Y*, DÂ (di), BHAKSH (eat), BHA*G* (share), BHU*ñG* (?) (enjoy, eat and drink), *S*Â (give).

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[1] Pân. vi, 1, 47; see also vi, 1, 54, and as to apagûram from gur, vi, 1, 53.

9. Cut.

KU*T*, KU*TT*, KÆ and SKÆ, KÆnT, KHA*ND*, *KH*Â (*khi*), *KH*InD, TAKSH (fashion), TVAKSH, PI*mS* (fashion, adorn), BHInD, LÛ, VAP (shear), VÆRDH, VRA*SK*, *S*AT, *S*ÂS.

10. Gather, Observe.

*K*I (*k*ây), *K*IT, *K*INT.

11. Stretch, Spread.

ÆñG, TAN, TÂ, TÂY, PRATH, YAT, STAN (thunder).

12. Mix.

P*ÆñK*, MIKSH, MI*S*.

13. Scatter, Strew.

KÎRT (praise), KÆ, *KH*UR, DHVA*m*S, RÛSH, VAP (sow), SÂ (sow), STÆ.

14. Sprinkle, Drip, Wet.

UKSH, UnD, KNÛ, KLInD, GAL (drip), GHÆ, GHRÂ (sniff), *K*YUT, TU*S*, PRUSH, MIH, VÆRSH (rain), *S*ÎK, *SK*UT, SI*ñK*, STU, nom.

15 a. Shake, Tremble, Quiver, Flicker.

KAMP, KSHUBH, *GAMH* and *G*EH (struggle), TA*m*S, DUDH, DHÛ, DHÛP (smoke), BHUR (flicker), MAnTH (fire), MISH and MÎL (wink), RE*G*, VYATH, SPAND.

15 b. Shake (mentally).

KUP (shake with anger), TRAP (be abashed), TRAS (tremble with fear), DHÛ (see) ?, VI*G* (tremble), *S*RU (hear).

16. Throw down, Fall.

DHUR, DHÛRV, DHRU, DHVAL, DHVÆ, BHRA*mS* BHRESH, SRA*m*S, HUR, HÛR*KH*, HRU, HVAL, HVÆ (crooked).

17. Fall to pieces.

KAD (?), *S*AṬ (*s*âtay, caus. of *s*ad), *S*AD, *S*Î.

18. Shoot, Throw at.

AS, ISH, KṢHIP, SÆ*G* (send).

19. Pierce, Split.

TÆRnD (TRU*T*), NIKSH, VIDH, VYADH, *S*NATH.

20. Join, Fight, Check.

NAS, NI*M*S (kiss), MITH, MIL, YU, YU*ñG*, YUDH (fight), YUP (check).

21. Tear.

KUSH, DAL, DÆR, PA*T*, BÆRH and VÆRH (tear up, also tear together, make strong, big? see 36), RI*S*, LI*S*, LU*Ñ*K, SKU (pick).

22. Break, Smash.

BHA*ñG*, RU, RU*G*, RUP, LUmP.

23. Measure.

MÂ, MI (minoti, fix).

24. Blow.

DHAM, DHMÂ, VÂ, *S*USH (dry), *S*VAS.

25. Kindle.

InDH, DHUKSH.

26. Milk, Yield.

DUH.

27. Pour, Flow, Rush.

ÆRSH, KSHAR, KSHAL (wash), DHÅV, DHAV (rinse), NED (nad), PRU, PLU (float), RÎ, SNÂ (bathe), SNU, SYAnD, SRU, HU[1].

28. Separate, Free, Leave, Lack.

TYA*G*, MU*ñK*, YA*G* (sacrifice), YU (yuyoti), YU*KH*, RAKSH (keep off), RAH, RI*ñK*, VI*ñK*, VInDH, *S*AD (be eminent), *S*I*m*SH, HÂ.

29. Glean.

U*Ñ*K*H*.

30. Choose.

VÆR.

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[1] Cf. â-hâvas, jug, χέω, fundo.

31. Cook, Roast, Boil.

PA*K*, BHÆ*GG* (roast), *SÆ*, *S*RÂ, *S*RÎ.

32. Clean.

DÂ, NI*G* (wash), PÛ, PÛ*G* (?), *S*UnDH, *S*UmBH.

33. Wash.

KSHAL, DHÂV, NI*G* (nag), SNÂ.

34. Bend, Bow.

A*ñK*, UB*G*, KU*ñK*, KÛ*N*, NAM, BHU*G*.

35. Turn, roll.

LU*TH*, VAK, VA*ñK* (crooked), VAL, VISH*T* and VESH*T* (wrap), VÆRT.

36. Press, Fix.

KHÂD (chew), KHInD (oppress), BA*m*H, BÂDH, BÆRH (fix, see 21), MÛR*KH*, MYAKSH (cling), VÂH, VLAñG (press), VLÎ, STÎ and STYÂ (to become pressed and hard).

37. Squeeze.

A*m*H, nom., ÎH (eager), PL*ND*, PIBD (fasten), PÎ*D*, SU.

38. Drive, Thrust.

A*G*, Î*G*, E*G*, KAL, TU*K*, nom. (generate), TU*ñG*, TUnD, NUD, VA*G* (to be strong), HI.

39. Push, Stir, Live.

Î*D* (pray), ÎR, ÆD, GHÛR*N*, *K*AK, *K*UP, *K*ESH*T*, *K*YU, *G*I (quicken), *G*INV, *G*ÎV, *G*Û, *G*YÂ (live), MÎV, MUH, MÛ, LU*D*, LUL, VRÂDH (strong), SÛ (generate), SÛD (?).

40. Burst, Gush, Laugh, Beam.

Æ*K*, KAS, KÂ*S*, *G*AKSH (laugh), *G*YUT, TAK, TVISH, DIV (dyu), DÎ, DÆRP (exult), DYU, DYUT, NABH, PHAR, PHAL, MAnD (rejoice), MUD, VAS (u*kkh*ati), SPHA*T*, SPHAR, SPHAL, SPHU*T*, SPHUR, SPHUL, SPHÆ, SMI (smile), HAS (laugh).

41. Dress.

VAS.

42. Adorn.

BHÛSH.

43. Strip, Remove.

V*ÆñG*.

44. Steal.

*K*UR, TÂ (tây), MUSH, LU*nTH*, STÂ (stî, stây).

45. Check.

YUP, RUnDH, SIDH.

46. Fill, Thrive, Swell, Grow strong.

PUSH, PÛR, P*ÆN*, P*Æ*, PRÂ, PRÎ, RAP*S*, *S*Û, *S*VÂ, *S*VI.

47. Cross.

TIR, TUR, TUL, TÛRV, T*Æ*, TRÂ, TVAR, PÂRAY, P*Æ* (cross, be busy ?).

48. Sweeten.

SVÂD, cf. SÛD.

49. Shorten.

HRAS.

50. Thin, Suffer.

K*ÆS*, KLI*S*.

51. Fat, Stick (love).

MInD (love), MED, SNIH (love).

52. Lick.

RIH, LIH.

53. Suck, Nourish.

*K*ÛSH, DUH, DHÂ, DHÎ, DHINV.

54. Drink, Swell.

PÂ, PINV, PÎ, PYÂ (swell), SPHÂ (fatten).

55. Swallow, Sip.

GIR, GIL, G*Æ*, GRAS, *K*AM and *SK*AM.

56. Vomit.

VAM.

57. Chew, Eat.

AD (?), KHÂD, *K*ARV, *K*ÛR*N*, *G*AmBH, PSÂ, BHARV, BHAS.

58. Open, Extend.

VYA*K* (VI*K*), *S*VA*ñK*.

59. Reach, Strive, Rule, Have.

AKSH, A*mS*, ÂP, ÎKSH (see), Î*S* (rule), *Æ*ñ*G*, GALBH, GÆRDH, GRABH, GLAH (gamble), GHA*T*, DAGH, NAKSH, NA*mS*, YÀKSH (hunt), YAT, RAmBH, LAmBH, VInD, VÎ.

60. Conquer, Take by violence, Struggle.

KSHI (possess), *G*I, *G*YÂ, DAM, VAN, VISH, SAN, SP*Æ*, SPÆRDH, SPÆRH.

61. Perform, Succeed.

RÂDH, SÅDH, SIDH.

62. Attack, Hurt.

AM, KSHA*N*, KSHAP (abstain), KSHÎ (destroy), DAmBH, DÛSHay, DRUH, MÎ, RISH, VADH.

63. Hide, Dive.

GÅH (GADH, GABH), GUH, *K*AT, *G*AH (?), HNU.

64. Cover, Embrace.

*KH*AD, VÎ and VYÂ, V*Æ*, *S*RISH, *S*LISH, *S*VA*ñK*, SKU, STHAG.

65. Bear, Carry.

ÛH, KSHAM, DH*Æ*, BH*Æ*, VAH, SAGH, SAH (can), H*Æ*.

66. Can, Be strong.

*G*AN (beget), *GÑ*Â (know), TU, DAKSH, PAT, MA*m*H, VÎ*D* (strengthen), *S*AK (*S*IKSH).

67. Show.

DI*S*, SÛ*K*.

68. Touch.

SPÆ*RS*, (PÆ*RS*, nom.)

69. Strike.

KU*NTH*, GHAN, TA*D*, HAN, HI*MS*.

70. Ask.

NÂTH, NÂDH (in distress), PRA*KH* (pra*s*), YÂ*K*.

71. Watch, Observe.

ÛH, DÆ, D*RS*, PÂ (protect), *S*AM.

72. Lead.

ARH (be first), NÎ.

73. Set.

DADH, DHÂ, SKAmBH, STAmBH.

74. Hold, Wield.

DHÆ, YAM.

75. Give, Yield.

DAD, DÂ, DÂ*S* (dă*s*asya, honour), RAnDH (submit), RÂ, RÂS.

76. Cough.

KÂS (kas, burst).

77. Thirst (dry).

TÆRSH.

78. Hunger.

KSHUDH.

79. Yawn.

*G*ÆMBH.

80. Spue.

KSHU (sneeze), *KH*ÆnD, SH*TH*ÎV.

81. Fly.

DÎ (*D*Î), PAT (fall).

82. Sleep.

DRÂ, SAS, SVAP.

83. Bristle, Dare.

DHÆRSH, *S*ÆRDH, HÆRSH (rejoice).

84. Be angry, Harsh.

KUP (shake), KRUDH, RUSH.

85. Breathe.

AN, AH (?), *S*VAS.

86. Speak.

AH (breathe, say), GAD, *G*AP (whisper), *G*ALP (murmur), BRÛ, BHA*N*, BHAN, BHÂSH, RAP (chatter), LAP, VA*K*, VAD, *S*AP (curse), *S*ABD, *SAmS* (praise), *S*ÂS, *S*ISH (teach).

87. See.

ÎKSH, KÛ, KHYÂ, *K*AKSH, DÆ*R*, DÆ*RS*, PA*S*, SPA*S*.

88. Hear.

*S*RU (shake), *S*RUSH.

89. Smell, Sniff.

GHRÂ, cf. GHÆR.

90. Sweat.

SVID.

91. Seethe, Boil.

KVATH, YAS, YESH.

92. Dance.

NA*T*, NÆRT.

93. Leap.

KÛRD, KRÎ*D* (play), KHA*ÑG* (limp), *KAÑK*, TVAṄG, PHA*N*, LAṄGH, VALG, *S*AL, *SAS*, SKAND.

94. Creep.

TSAR, RIṄKH, RIṄG.

95. Stumble.

SKHAL, SRIDH.

96. Stick.

LAG (attach), LÎ (cling), SA*K* (attend), SA*ñG*, SAP (attend), SEV (attend).

97. Burn.

USH (vas ?), KÛ*D* and KÛL, KSHÂ, GHÆ*R*, *G*VAR, *G*VAL, TAP, DAH, DÛ, PLUSH, HAR (love ?), HÎ*D*, HÆ*R* (be angry), HEL, HRÎ (be ashamed).

98. Dwell.

VAS, VI*S*.

99. Stand.

STHÂ.

100. Sink, Lie, Fail.

DUSH (fail), PAD, MA*GG*, *S*Î (lie), *S*YÂ (*S*Î), SAD, SRÎV (dry, fail).

101. Swing.

ÎṄKH, KHEL, VIP.

102. Hang down, Lean.

RAMB, LAMB, *S*RAmBH, *S*RI (lean).

103. Rise up, Grow.

ÆnDH, EDH, RÂDH, RUDH, RUH, VAKSH, VÆRDH.

104. Sit.

ÂS.

105. Toil.

KLAM, *S*AM, *S*IM.

106. Weary, Waste, Slacken.

GLÂ, *G*AS, TAND, TAM, TÎM, DÂS (?), NA*S* (perish), VÂ, *S*AM (quiet), *S*RATH, *S*RAM, *S*LATH, STÎM (stiffen).

107. Rejoice, Please.

AV (ûta), U*K*, KAN, KAM, KÂ, KÂṄKSH, KRATH, KRÎ*D* (play), *K*AN, *G*USH, TUSH, TÆRP, DÎV (play), NAND, RA*N*, RA*N*V, RAM, LAM, LAL, LAS.

108. Desire, Love.

ISH, LASH, LUBH, VA*S*, VÂÑ*KH*, VEN, SPÆRH, HARya.

109. Wake.

GÆ, *G*ÂGÆ, BUDH.

110. Fear.

BHÎ, BHÎSH, BHYAS.

111. Cool, Refresh.

HLÂD.

112. Stink.

KUTH, KVATH (boil), PÛY.

113. Hate.

DVISH, PÎY.

114. Know.

*GÑ*A, BUDH, MÂ, VAT, VID.

115. Think.

KÂLAY, DHÎ, DHYÂ, MAN, MNÂ (remember), *S*AṄK, SMÆ (remember), see MÆ.

116. Shine.

KÂ*S*, KHA*K*, KHYÂ (K*S*Â), *K*AKÂS, *K*AND, *KH*AnD, *G*YUT, DÎV (play), DÎ (DÎDÎ), DÎP, DYU, DYUT, DHÎ (DÎDHÎ), DHYÂ, BHAND, BHÂ, BHÂM (be angry), BHAS, BHRÂ*G*, RÂ*G*, RU*K*, LOK, LO*K*, *SUK*, *S*UnDH, *S*UmBH, *SK*AND, *S*VIT, SVAR.

117. Run.

TVAR (hasten), DRAM, DRÂ, DRU, DHAN, DHANV, DHÅV, RA*m*H.

118. Move, Go.

AṄG, A*T*, AT, I, IṄG, IN, INV, IL (come), Î, ÎSH, *Æ* (*ÆKKH*), *Æ*SH, KRAM, GAM, GÂ, *K*AR, *K*AL, *GÆ*, *G*RI, DHRÂ*G*, NU, PAD, BHRAM, YÂ, YÂD (?), LA*D*, VRA*G*, SÆ, SÆP, STIGH, HÂ.

119 a. Noise (inarticulate).

KÛ*G*, KÆP (lament), KRAND, KRU*S*, KVA*N*, KSHVI*D* and KSHVID (hum), KHAR*G* (creak), GAR*G* (roar), GARD (shout), GARH (chide), GU, GU*ÑG* (hum), GÛRD, GÛRDH, GHUSH, TAR*G*, DÎV (lament), DHVAN, NAD, NARD (bellow), NInD, PRUTH (snort), BÆR*M*H (roar), BHARTS (blame), BHASH (bark), MÂ (bellow), RA*T* (howl), RÂ (bark), RÅS (roar), RIPH (snarl), RU, RUD, VÂ*S* (bellow), VRA*N*, *SIÑG* (twang), SPHÛR*G* (rumble), SVAN, SVAR, HÛ, HESH (whinney), HRÂD, HRESH, HLÂD, HVÂ.

119 b. Noise (musical).

GÂ (gt, sing), GUR (greet), GÆR (sing), *GÆ*R, NÛ (praise), PAN (praise, admire), RIBH (sing), VAND, *S*LÂGH, STU, STUBH.

120. Do.

KÆR (SKÆR, *κείρω*, O.H.G. skiru), KA⌊P, TAKSH, TVAKSH, DU (zauen), RA*K*.

121. Be.

AS (breathe), BHÛ (grow), VAS (dwell), VÆRT (turn).

INDEX TO APPENDIX. I.

59. AKSH, reach.
118. AṄG, move.
34. A*ñK*, bend.
38. A*G*, push, drive.
5. A*ñG*, smear, adorn.
118. A*T*, move, wander.
118. AT, move, wander.
57. AD, eat.
85. AN, breathe.
62. AM, attack.
118. AY, see Î.
72. ARH, lead, be first, deserve.
107. AV, please.
7. A*S*, eat; 8.
8. A*mS*, share, attain; 59.
121. AS, be.
18. AS, throw, shoot.
85. AH, breathe (?); 86, speak.
37. A*m*H, squeeze; cf. NAH.

59. ÂP, reach.
104. ÂS, sit.

118. Î, move, go; see AY.
118. I, move, send; IN, INV.
118. IṄG, move, intrans.
25. InDH, kindle.
118. IN, move, go; see I.
118. INV, move; see I.
118. IL, come.
108. ISH, desire.
18. ISH, throw, shoot forth.

59. ÎKSH, reach, see; 87.
101. ÎṄKH, swing.
38. Î*G*, drive.
39. Î*D*, urge, pray; see ÆRD.
39. ÎR, stir.
39. ÎL, stir.
59. Î*S*, reach, rule.
118. ÎSH, move.
37. ÎH, pant for, desire.

14. UKSH, sprinkle.
103. UKSH, grow; see VAKSH.
107. U*K*, please.
29. U*ÑKH*, glean.
14. ṲnD, wet.
34. UB*G*, bend, force.
2. UmBH, string together; see NABH.
97. USH, burn.

65. ÛH, carry; see VAH.
71. ÛH, watch.
118. Æ, *ÆKKH*ATI, go, advance.
40. Æ*K*, beam, praise.
11. Æ*ñG*, stretch; 59, reach.
39. ÆD, stir.
103. ÆnDH, rise, grow.
27. ÆSH, rush; 118.

38. E*G*, drive, stir.
103. EDH, rise, grow.
118. ESH, see ÎSH.

17. KAD, fall, decay.
107. KAN, KÂ, rejoice.
107. KAM, rejoice, love.
15. KAMP, shake.
38. KÂLAY, drive, produce.
115. KÂLAY, reckon.
6. KASH, scratch.
40. KAS, burst open.
107. KÂ, see KAN.
107. KÂṄKSH, love, desire.
40. KÂ*S*, shine; 116.
76. KÂS, cough.
13. KÎRT, praise.
34. KU*ñK*, bend, curl.
9. KU*T*, cut.
9. KU*TT*, caus. cut, divide.
69. KU*NTH*, strike.
112. KUTH, stink; see KVATH, seethe.
15b. KUP, shake wit anger; 84.
21. KUSH, tear.
87. KÛ, see.
119. KÛ*G*, noise, hum.
97. KÛ*D*, KÛL, burn.
34. KÛ*N*, bend, shrink.
93. KÛRD, leap.
9. KÆ, cut, make; 120.
9. KÆnT, cut.
2. KÆnT, spin, possibly connected with KÆnT, cut into small slices, as in DÂ, cut, DÂ, bind.
119. KÆP, noise, lament (?).
50. KÆ*S*, become thin.
6. KÆSH, scratch, plough.
13. KÆ, scatter.
120. KAP, do, fit.
14. KNÛ, wet.
3. KRAKSH, crush.
107. KRATH, rejoice.

119. KRAND, noise, cry.
118. KRAM, go, stride.
8. KRÎ, buy.
93. KRÎD, leap, play; 107.
5. KRU (?), smear, harden.
84. KRUDH, be angry; 5.
119. KRUS, noise, shout.
2. KLATH, twist, roll.
119. KLAND, noise, cry.
105. KLAM, toil, weary.
14. KLInD, wet.
50. KLIS, become thin, suffer.
119. KVAN, noise, sound.
91. KVATH, boil, seethe.
62. KSHAN, hurt.
8. KSHAD, divide.
62. KSHAP, abstain.
65. KSHAM, bear, endure.
27. KSHAR, flow.
27. KSHAL (flow), wash; 33.
97. KSHÂ, burn.
60. KSHI, conquer, take, have.
62. KSHÎ, destroy.
18. KSHIP, throw forth.
80. KSHU, sneeze.
3. KSHUnD, crush.
78. KSHUDH, be hungry.
15. KSHUBH, shake, quake.
4. KSHNU, sharpen.
119. KSHVID, hum.
119. KSHVID, hum.

116. KHAK, shine.
93. KHAÑG, limp, halt.
9. KHAND, cut.
1. KHAN and KHÂ (skan), dig; see scratch, 6.
119. KHARG, noise, creak.
36. KHÂD, press, chew; 57.
36. KHInD, press, pierce.
101. KHEL, swing.
87. KHYÂ, see; see KÂS, 116.

86. GAD, speak.
63. GADH, dive; see GÂH.
63. GABH, dive; see GÂH.
118. GAM, GAKKH, go.
119. GARG, noise, roar.
119. GARD, noise, shout, exult.
119. GARH, noise, chide.
14. GAL, drip.
59. GALBH, reach, dare.
118. GÂ, go.
119b. GÂ (gi), sing.
63. GÂH, dive, enter.
55. GIR, GIL, swallow; see GÆR.
119. GU, noise, sound.
119. GUÑG, hum.
2. GUmPH, twine.
119b. GUR, greet; see GÆR.
63. GUH, hide.
119. GÛRD, noise, shout, exult.
119. GÛRDH, noise, shout, exult.
109. GÆR, wake, GÀGÆR.
59. GÆRDH, reach, be greedy.
119b. GÆR, sing.
55. GÆR, swallow; see GIR.
2. GRAnTH, knot.
59. GRABH, GRAH, reach, seize.
55. GRAS, swallow.
59. GLAH, gamble.
106. GLÂ, weary.

59. GHAT, reach, strive.
3. GHATT, rub.
69. GHAN, see HAN
7. GHAS, eat.
119. GHUSH, noise, sound.
39. GHÛRN, stir, waver.
14. GHÆR, drip.
97. GHÆR, burn, (ghrinâ, gharma); see HÆR.
3. GHÆRSH, rub.
89. GHRÂ, smell, sniff; see GHÆR, drip.

39. KAK, stir, quake.
116. KAKÂS, shine.
87. KAKSH, see, speak; 116.
93. KAÑK, leap, dance.
63. KAT, hide.
107. KAN, rejoice.
116. KAND, shine; see SKAND.
55. KAM, sip; see SKAM.
118. KAR, move, go.
57. KARV, chew; see KÛRN; 3.
118. KAL, move, go.
10. KI (kây), gather, observe.
10. KIT, gather, perceive.
10. KINT, gather, think.
4. KUD, sharpen, impel.
39. KUP, stir.
44. KUR, steal.
57. KÛRN, pound; 3.
53. KÛSH, suck, draw.
2. KÆRT, join, bind.
39. KESHT, stir.
39. KYU, stir.
14. KYUT, drip.

64. KHAD, cover.
107. KHAnD, rejoice, seem; 116.
9. KHÂ (khâi), cut.
9. KHInD, cut.
6. KHUR, scratch; 13, scatter.

80. *KHÆ*nD, spue.

15. *GAM*H, shake; see *GEH*.

7. *GAKSH*, eat.

40. *GAKSH*, burst, laugh; see HAS.

66. *GAN*, *GÂ*, can, beget, be born.

86. *GAP*, whisper, speak.

57. *GAmBH*, chew, crush.

86. *GALP*, murmur, speak.

106. *GAS*, weary.

63. *GAH*, hide.

109. *GÂGÆ*, see GÆ.

60. *GI*, conquer, overcome.

39. *GI*, *GINV*, stir, quicken.

39. *GÎV*, stir, quicken, live.

3. *GUR*, waste.

107. *GUSH*, enjoy.

39. *GÛ*, stir, be swift.

3. *GÛRV*, rub, waste.

118. *GÆ*, go, approach.

79. *GÆRMBH*, yawn.

119b. *GÆ*, sing.

3. *GÆ*, rub, waste; see *GUR*.

15. *GEH*, struggle.

66. *GÑÂ*, can, know; 114.

60. *GYÂ*, overcome, fail.

39. *GYÂ*, live.

40. *GYUT*, beam; 116.

118. *GRI*, move, go.

97. *GVAR*, burn.

97. *GVAL*, burn.

81. *DÎ*, fly; see DÎ.

40. TAK, burst, rush.

9. TAKSH, cut, fashion; 120.

5. TA*ñK*, harden, coagulate.

69. TA*D*, strike; cf. TÆnD (?).

11. TAN, stretch, TÂ; see STAN.

106. TAND, weary.

97. TAP, burn, heat.

106. TAM, weary, faint.

119. TAR*G*, noise, threaten.

15. TA*mS*, shake.

44. TÂ (tây), steal; see STÂ (stî, stày).

11. TÂ, TÂY, stretch; see TAN.

4. TI*G*, sharpen.

106. TÎM, weary, quiet.

47. TIR, see TÆR.

66. TU, be strong.

38. TU*K*, drive, generate.

38. TU*ñG*, drive, thrust.

38. TUnD, drive, thrust.

47. TUR, see TÆR.

47. TÛRV, cross, overcome.

47. TUL, cross, lift.

47. TUL, see TÆR.

14. TU*S*, drip.

107. TUSH, be pleased.

47. TÛRV, cross, conquer.

19. TÆnD, pierce.

107. TÆRP, be pleased.

77. TÆRSH, thirst (dry).

3. TÆ*mH*, crush.

47. TÆR, cross; TIR, TUR.

28. TYA*G*, leave.

15b. TRAP, shake with fear.

15b. TRAS, tremble with fear.

47. TRÂ, cross, rescue.

19. TRU*T*, split.

9. TVAKSH, cut, fashion; 120.

93. TVAÑG, leap.

117. TVAR, hasten; cf. 47.

40. TVISH, gush, beam.

94. TSAR, creep.

66. DAKSH, be strong.

59. DAGH, reach.

75. DAD, see DÂ.

73. DADH, see DHÂ.

62. DAmBH, hurt.

60. DAM, rule.

8. DAY, divide, share.

21. DAL, tear.

7. DA*mS*, bite.

106. DÂS, weary, waste.

97. DAH, burn.

75. DÂ, give; DAD.

2. DÂ (di), bind, possibly the same as DÂ (di), share, cut.

8. DÂ (di), divide, share.

32. DÂ, clean.

75. DÂ*S*, give, offer.

40. DIV, shine; 116.

67. DI*S*, show.

5. DIH, smear, knead.

81. DÎ, fly; also *DÎ*.

40. DÎ, DÎDÎ, shine; 116.

116. DÎP, shine.

107. DÎV, play.

119. DÎV (dev), noise, lament.

97. DÛ, burn.

120. DU, do.

15. DUDH, shake.

100. DUSH, fail.

26. DUH, milk, yield; 53, suck.

62. DÛSHay, hurt.

71. DÆR, watch, heed; 87.

40. DÆRP, exult.

2. DÆRBH, bunch, bind.

71. DÆR*S*, watch, see; 87.

2. DÆ*mH*, bind, make firm.

21. DÆR, tear.

40. DYU, see DÎV; 116.

40. DYUT, burst, shine; 116.

117. DRAM, run.

117. DRÂ, run.

82. DRÂ, sleep.
117. DRU, run.
62. DRUH, attack.
113. DVISH, hate.

117. DHAN, run.
117. DHANV, run.
24. DHAM, blow.
73. DHÂ, set; DADH.
53. DHÂ, suck; see DHÎ.
27. DHÂV, run; 117.
27. DHÂV, rinse; 33. wash.
53. DHÎ, DHINV, suck, nourish.
115. DHÎ, think; see DÎDHÎ; 116.
25. DHUKSH, kindle.
16. DHUR, throw down.
15[ab]. DHÛ, shake, see.
15. DHÛP, smoke.
16. DHÛRV, throw down.
65. DHÆR, bear, hold; 74.
83. DHÆRSH, bristle, dare.
24. DHMÂ, blow.
115. DHYÂ, think; 116.
118. DHRÅG, move swiftly.
16. DHRU, throw down.
119. DHVAN, noise, sound.
16. DHVAL, throw down.
13. DHVAṁS, scatter.
16. DHVÆ, throw down.

59. NAKSH, reach, attain.
92. NAṬ, dance.
119. NAD, noise, sound; see NED.
107. NAND, rejoice.
2. NABH, see NAH.
40. NABH, burst.
34. NAM, bend, bow.
119. NARD, noise, bellow.
106. NAS, perish.
59. NAṁS, reach, attain.
20. NAS, join.
2. NAH, bind.
70. NÂTH, see NÂDH.
70. NÂDH, ask, beg; cf. NAH, be straitened (?).
20. NIṀS, kiss.
19. NIKSH, pierce.
32. NIG, clean, wash.
119. NInD, noise, revile.
72. NÎ, lead.
119[b]. NÛ, sing, praise.
118. NU, move, go.
38. NUD, drive, thrust.
92. NÆṬ, dance.
27. NED, flow; see NAD.

31. PAK, cook.
21. PAṬ, tear.
81. PAT, fly, fall.
66. PAT, be strong, rule.
118. PAD, go, sink; 100.
119[b]. PAN, sing, praise.
87. PAS and SPAS, see.
2. PAS, bind.
54. PÂ, drink; see PÎ.
71. PÂ, watch, protect.
54. PÎ, PINV, swell; see PYÂ.
37. PIND, squeeze.
37. PIBD, squeeze, fasten.
9. PIṁS, cut, fashion, adorn.
3. PIṁSH, crush.
37. PÎD, squeeze.
113. PÎY, hate.
3. PUTH, crush.
46. PUSH, fill, thrive.
32. PÛ, clean.
32. PÛG, worship.
112. PÛY, stink.
46. PÛR, see PÆR.
47. PÆR, cross, pass; caus. pârayati.
47. PÆR, be busy (?).
12. PÆRñK, mix (plat?).
68. PÆRS, see SPÆRS.
46. PÆR, PÛR, PÆRN, fill; see PRÎ.
54. PYÂ, fill; see PÎ.
70. PRAKH, ask.
11. PRATH, spread.
46. PRÂ, fill.
46. PRÎ, fill, please.
27. PRU, flow.
119. PRUTH, noise, snort.
14. PRUSH, sprinkle.
27. PLU, flow, float.
97. PLUSH, burn; see PRUSH.
57. PSÂ, chew, devour; see BHAS.

93. PHAN, leap.
40. PHAR, burst, scatter.
40. PHAL, burst.

2. BAnDH, bind.
36. BAṁH, press, make firm.
36. BÂDH, press, oppress.
109. BUDH, wake, know; 114.
119. BÆRMH, roar; see VÆRMH.
36. BÆRH, make firm.
21. BÆRH, tear up; and VÆRH.
86. BRÛ, speak.

8. BHAKSH, share, eat.
8. BHAG, divide, share.
22. BHAñG, break.
86. BHAN, speak.
86. BHAN, speak.
116. BHAND, shine.

119. BHARTS, noise, revile.
57. BHARV, chew, devour.
119. BHASH, noise, bark.
57. BHAS, chew, devour.
116. BHÂ, shine.
116. BHÂM, be angry.
86. BHÂSH, speak.
116. BHÂS, shine.
9. BHInD, cut.
110. BHÎ, fear.
110. BHÎSH, fear.
34. BHU*G*, bend.
8. BHU*ñG*, enjoy, eat and drink.
15. BHUR, shake, flicker.
121. BHÛ, be.
42. BHÛSH, adorn.
65. BH*Æ*R, bear.
31 BH*ÆGG*, roast.
110. BHYAS, fear; see BHÎ.
118. BHRAM, move, roam.
16. BHRA*mS*, fall.
116. BHRÂ*G*, shine.
16. BHRESH, fall, totter.

100. MA*GG*, sink.
15. MAnTH, shake, kindle fire.
40. MAnD, gush, rejoice.
115. MAN, think.
66. MA*m*H, be strong, great, liberal, give; cf. MAGH.
23. MÂ (mi), measure; 114.
119. MÂ, noise, bellow.
23. MI (measure), fix.
62. MÎ, hurt.
12. MIKSH, mix.
20. MITH, join alternately.
51. MInD, fatten, cling, love; see MED.
20. MIL, join.
12. MI*S*, mix.
15. MISH, wink.
14. MIH, wet.
15. MÎL, wink.
39. MÎV, MÛ, stir.
28. MU*ñK*, free (MOKSH).
40. MUD, rejoice.
44. MUSH, steal.
39. MUH, stir, confuse.
39. MÛ, see MÎV.
36. MÛR*KH*, press, harden.
3. M*Æ*R, waste, die.
3. M*Æ*R, M*ÆRN*, crush.
3. M*Æ*RKSH, rub.
3. M*ÆRK*, crush.
3. M*ÆñG*, rub, wipe.
3. M*ÆRD*, be soft, gracious.
3. M*ÆRN*, crush.
3. M*Æ*RD, rub.
3. M*Æ*RDH, waste, neglect.
3. M*ÆRS*, rub, touch.
3. M*Æ*RSH, waste, neglect.
51. MED, fatten.
115. MNÂ, think, remember.
36. MYAKSH, cling, press close.
3. MRAD, crush.
3. MRIT, crush.
3. MRU*K*, waste, set.
3. MRE*D*, soften, please.
3. MLÂ, fade.
3. MLIT, crush.
3. MLU*K*, waste, set.
3. MLUP, waste, set.

59. YAKSH, strive, hunt.
28. YA*G*, sacrifice.
11. YAT, stretch, strain, struggle; 59.
74. YAM, hold, wield.
91. YAS, seethe; YESH.
118. YÂ, go.
70. YÂ*K*, ask.
118. YÂD, move together (?).
20. YU, join.
28. YU, separate (YU*KH*).
20. YU*ñG*, join.
20. YUDH, join in fight.
20. YUP, check; 45.
91. YESH, see YAS.

28. RAKSH, free, protect.
120. RA*K*, do, make.
5. RA*ñG*, smear, colour.
119. RA*T*, noise, howl.
107. RA*N*, shout, rejoice.
107. RA*NV*, rejoice.
6. RAD, scratch, dig.
75. RAnDH, yield, subject.
86. RAP, speak, chatter.
46. RAP*S*, fill.
59. RAmBH, reach after, take.
107. RAM, rejoice.
102. RAMB, hang down.
119. RAS, noise, roar; see RÂS.
117. RA*m*H, run.
28. RAH, leave.
75. RÂ, give.
119. RÂ, noise, bark.
116. RÂ*G*, rule, shine.
61. RÂDH, succeed; 103.
119. RÂS, noise, roar; see RAS.
75. RÂS, give.
27. RÎ, flow.
6. RIKH, scratch.
94. RIṄKH, RIṄG, creep.
28. RI*ñK*, leave.
5. RIP, smear.
119. RIPH, noise, snarl.
119[b]. RIBH, sing, praise.

21. RI*S*, tear.
62. RISH, hurt.
52. RIH, lick.
119. RU, noise, cry.
22. RU, break.
116. RU*K*, shine.
22. RU*G*, break.
119. RUD, noise, cry.
103. RUDH, rise, grow.
45. RUnDH, check.
22. RUP, break, hurt.
84. RUSH, be angry.
103. RUH, rise, ascend.
5. RÛKSH, be harsh.
13. RÛSH, scatter.
15. RE*G*, shake.

96. LAG, stick.
93. LAṄGH, leap.
5. LA*GG*, colour, be ashamed.
118. LA*D*, move, go.
86. LAP, speak, chatter.
59. LAmBH, reach after, take.
107. LAM, rejoice; see RAM.
102. LAMB, hang down.
107. LAL, rejoice, sport.
108. LASH, desire.
107. LAS, rejoice; see RAS.
6. LIKH, scratch, write.
5. LImP, smear.
21. LI*S*, tear.
52. LIH, lick.
96. LÎ, stick.
21. LU*ÑK*, tear.
35. LU*TH*, turn, roll.
44. LU*nTH*, steal.
39. LU*D*, stir.
22. LUmP, break.
108. LUBH, desire.
39. LUL, stir, quicken.
9. LÛ, cut.
116. LOK, shine, see.
116. LO*K*, shine, see.

35. VAK, turn; see VA*ñK*.
103. VAKSH, grow; UKSH.
86. VA*K*, speak.
35. VA*ñK*, turn, crooked.
38. VA*G*, drive.
114. VAT, know (?).
86. VAD, speak.
62. VADH, hurt, slay; or BADH.
60. VAN, VÂ, conquer.
119[b]. VAND, sing, praise.
13. VAP, scatter, sow.
9. VAP, shear.
2. VABH, weave.
56. VAM, vomit.
35. VAL, turn.
93. VALG, leap.
108. VA*S*, desire.
40. VAS, beam, U*KKH*; see USH.
41. VAS, dress.
98. VAS, dwell; 121.
65. VAH, carry.
24. VÂ, blow.
2. VÂ (vi), weave.
106. VÂ, weary.
108. VÂ*ÑKH*, desire.
119. VÂ*S*, noise, bellow.
36. VÂH, press. VI*K*, see VYA*K*, 58.
28. VI*ñK*, separate, sift.
15[b]. VI*G*, tremble.
114. VID, know.
59. VInD, reach, find.
19. VIDH, pierce; see VYADH.
28. VInDH, lack.
101. VIP, VEP, swing.
98. VI*S*, enter, dwell.
60. VISH, struggle for.
35. VISH*T*, roll, wrap; see VESH*T*.
59. VÎ, reach, have, enjoy.
64. VÎ, cover; see VYÂ.
66. VÎ*D*, strengthen.
64. VÆ, cover.
30. VÆ, choose.
119. VÆ*RMH*, roar; see BÆ*RMH*.
43. VÆ*ñG*, strip.
35. VÆRT, turn; 121.
103. VÆRDH, grow.
9. VÆRDH, cut, make.
14. VÆRSH, sprinkle, rain.
21. VÆRH, see BÆRH.
108. VEN, desire.
35. VESH*T*, roll, wrap; see VISH*T*.
58. VYA*K* (VI*K*), open.
15. VYATH, shake.
19. VYADH, pierce.
64. VYÂ and VÎ, cover.
118. VRA*G*, move, go.
119. VRA*N*, noise, sound.
3. VRAnD, crush, weaken.
9. VRA*SK*, cut.
39. VRÂDH, stir, be strong.
36. VLAṅG, press, pursue.
3. VLÎ or BLÎ, crush; 36.

66. *S*AK, be strong, can; *S*IKSH, learn.
115. *S*AṄK, think, doubt.
9. *S*AT, cut.
17. *S*AT (sâtay), fall.
17. *S*AD, fall.
28. *S*AD, excel.
86. *S*AP, curse.
86. *S*ABD, speak.
105. *S*AM, toil; *S*IM.
106. *S*AM, weary, quiet.
71. *S*AM, watch, observe.
93. *S*AL, leap.
93. *S*A*S*, leap.
86. *S*Am*S*, praise.
9. *S*ÂS, cut.
8. *S*Â, divide, give.
4. *S*Â (si), sharpen.
4. *S*ÂN, whet.

86. *S*ÂS, order; *S*ISH, teach.
4. *S*I, sharpen.
119. *S*I*Ñ*G, noise, twang.
105. *S*IM, toil.
28. *S*I*m*SH, leave.
17. *S*Î, fall; see *S*AD and *S*AT.
100. *S*Î, sink, lie.
14. *S*ÎK, moisten.
116. *S*U*K*, shine.
32. *S*UnDH, clean; 116.
32. *S*UmBH, clean; 116.
24. *S*USH (blow), dry; cf. *S*VAS.
46. *S*Û, *S*VÂ, *S*VI, swell.
31. *S*Æ, boil; *S*RÂ, *S*RÎ, *sr*îta and *sr*âta.
83. *S*ÆRDH, dare.
3. *S*Æ (*S*RÎ?), crush, mix?
116. *S*KAND, shine; see *K*AND.
55. *S*KAM, sip; see *K*AM.
14. *S*KUT, drip.
19. *S*NATH, pierce.
100. *S*YÂ, *S*Î, sink together, coagulate; see *S*Î.
106. *S*RATH, weary, slacken; see *S*LATH.
102. *S*RAmBH, hang down, trust.
105. *S*RAM, toil, weary.
31. *S*RÂ (*sr*î), boil; see *S*Æ.
102. *S*RI, lean, go to.
64. *S*RISH, see *S*LISH.
15b. *S*RU, shake, hear.
88. *S*RU, hear.
88. *S*RUSH, hear.
106. *S*LATH, weary, slacken.
119b. *S*LÂGH, sing, praise.
64. *S*LISH, embrace.
58. *S*VA*ñK*, open, spread; 64.
24. *S*VAS, blow, cf. *S*USH; 85, breathe.
46. *S*VÂ, see *S*Û.
46. *S*VI, see *S*Û.
116. *S*VIT, shine.
80. SH*TH*ÎV, spue.
65. SAGH, bear, be equal.
96. SA*K*, stick, follow.
96. SA*ñG*, stick.
100. SAD, sink, sit.
60. SAN, SÂ, conquer, win.
96. SAP, attend.
82. SAS, sleep.
65. SAH, bear, sustain.
13. SÂ, throw, sow.
2. SÂ (si), bind.
61. SÂDH, perform, succeed; cf. SAH.
14. SI*ñK*, sprinkle.
45. SIDH, check, keep off.
61. SIDH, succeed.
2. SÎV (syû), sew.
37. SU, squeeze out.
39. SÛ, stir, generate.
67. SÛ*K*, point out.
39. SÛD, stir, impel (sweeten?).
118. SÆ, go, flow.
18. SÆ*G*, throw forth.
118. SÆP, move, creep.
96. SEV, cling, attend on; 2.
93. SKAND, leap.
73. SKAmBH, fix, prop.
21. SKU, tear, pick.
64. SKU, cover.
9. SKÆ, see KÆ, cut, make.
95. SKHAL, stumble.
11. STAN, stretch, thunder.
73. STAmBH, fix, prop.
44. STÂ (stî, stây), steal.
118. STIGH, move, mount.
36. STÎ, see STYÂ.
106. STÎM, weary, stiffen.
119b. STU, sing, praise.
14. STU, drip.
119b. STUBH, sing, praise.
13. STÆ, scatter.
3. STÆH, crush.
36. STYÂ, STÎ, become pressed, hard.
64. STHAG, cover.
99. STHÂ, stand.
27. SNÂ, bathe.
51. SNIH, stick, love.
27. SNU, pour.
15. SPAND, shake, quiver.
87. SPA*S*, see; PA*S*.
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40. SPHAR, SPHÆ, burst.
40. SPHAL, burst.
54. SPHÂ (sphî), swell.
40. SPHU*T*, burst.
40. SPHUR, burst.
40. SPHUL, burst.
119. SPHÛR*G*, noise, rumble.
40. SMI, smile.
115. SMÆ, think, remember; see MÆ.
27. SYAnD, flow, run.
2. SYÛ, see SÎV.
16. SRA*m*S, fall.
95. SRIDH, stumble, blunder.
100. SRÎV, dry, fail.
27. SRU, flow.
64. SVA*ñG*, embrace.
48. SVÂD, sweeten see SÛD.

119. SVAN, noise, sound.
82. SVAP, sleep.
116. SVAR, shine.
119. SVAR, noise, sound.
90. SVID, sweat.

69. HAN, strike.
108. HARya, desire, love; see GHÆR, 97.
40. HAS, laugh.
28. HÂ, leave.
118. HÂ, move, go.
38. HI, drive.
69. HI*M*S, strike, injure.
97. HÎ*D*, burn, be angry; see HEL.
27. HU, pour libations.
16. HUR, fall.
119. HÛ, noise, call; see HVÂ.
16. HÛR*KH*, fall, fail.
65. HÆR, carry away.
97. HÆR, burn, be angry.
83. HÆRSH, bristle, rejoice.
97. HEL, burn, be angry.
119. HESH, whinney; see HRESH.
63. HNU, hide.
49. HRAS, shorten.
119. HRÂD, noise; see HLÂD.
97. HRÎ, burn, be ashamed.
16. HRU, fall.
119. HRESH, neigh.
111. HLÂD, cool, refresh.
119. HLÂD, noise; see HRÂD.
16. HVAL, fall, crooked.
119. HVÂ, call; see HÛ.
16. HVÆR, fall, crooked.

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